ELECTRICAL SOUTH

OCTOBER
1945

52-In Hotel Type

FANS by HUNTER-CENTURY

59th SEASON

HUNTER — exclusive fan makers since 1886 — is again in production of all of its regular pre-war types of fans and ventilators. Established HUNTER distributors throughout the United States have been allocated a dependable supply for normal dealer requirements. HUNTER ZEPHAIR Attic Fans are being delivered on consistent shipping schedules to all Southern territories for fall and winter installation. Discriminating dealers may now avoid buying inferior quality substitutes and return to the best fans ever made by HUNTER.

HUNTER FAN & VENTILATING COMPANY, INC.

Factory: FULTON, N. Y.

General Sales Offices: Memphis, 400 So. Front St. *Eastern Sales Office*: New York, 92 Warren St. *Western Sales Office*: St. Louis, 1706 Olive St.

Sales Offices:
ATLANTA
CHICAGO
DALLAS
HOUSTON
LOS ANGELES
PHILADELPHIA

Zephair Comfort Cooling and Commercial Ventilators

Sales Offices:
BOSTON
CLEVELAND
DETROIT
KANSAS CITY
NEW ORLEANS
PITTSBURGH

SYLVANIA NEWS
CONTRACTOR EDITION

OCTOBER *Published by* SYLVANIA ELECTRIC PRODUCTS INC., Salem, Mass. 1945

LIST OF SYLVANIA ELECTRIC LAMPS EXCEEDS 2,000 TYPES

Sylvania Electric has developed and produces a line of over 2,000 types of lamps — fluorescent and incandescent — to fill almost any lighting requirement.

Many of these lamps are designed for use in various types of equipment where special lighting jobs are needed or where unusual performance characteristics are necessary. The scope of wattages, voltages, bases, bulb shapes, filament types and light outputs available is so wide that practically every requirement for equipment lamps can be met from the standard list.

Lamps designed for use in ordinary capacities have been built to take various kinds of punishment. Of these there are lamps with vibration-resistant filaments for use near heavy, pounding machinery or wherever vibration may harm an ordinary lamp. Rough service lamps have also been developed to take hard knocks and still give long, useful service.

For lighting the interiors of bake ovens, there are Sylvania bulbs that will operate efficiently in temperatures of 550°; and for operation in refrigerators, there are Sylvania vacuum lamps that give good light with a minimum of heat.

SYLVANIA KNOW-HOW

The research that went into the development of many of these special lamps has helped all along the line in making Sylvania lamps tops for lighting quality. The know-how learned in developing a lamp that few people might use has, in many cases, made it possible to improve further a more commonly used lamp. That is why Sylvania has put so much effort into solving these tough "little" problems in lighting.

SYLVANIA DEVELOPS NEW WHITE FLUORESCENT LAMP

Fills Need for Color Between Standard Daylight and White Lamps

A new white fluorescent lamp recently developed by Sylvania Electric has a color near daylight and yet delivers over 10% more light than the usual Daylight fluorescent lamps.

This lamp has been produced after several years of development work, to satisfy a consistent demand for a lamp having a color between the Daylight and White lamps. The new lamp will be designated as 4500° White (the standard Daylight lamp is 6500° and the regular White lamp is 3500°). This 4500° color gives a light which is "whiter" than the White and not as "blue" as the Daylight.

Since the 4500° White lamp gives nearly the same amount of light as regular white lamps, it will find wide use wherever a very white, near-daylight illumination is preferred. It will be available in the 40 Watt T-12 and 100 Watt T-17 sizes and will have the same lumen maintenance ratings as other 40 and 100 Watt fluorescent lamps.

The 4500° White lamps are an addition to the line of new Sylvania developments — which include the Long-Slim fluorescent lamps. These new lamps are of the instant-start type and require no starters — simplifying the installation of systems using them. They will find wide use in continuous row lighting because of lengths up to 96" and also will be ideal for showcase and display lighting.

U. S. LEATHER CO. OFFICE SYLVANIA LIGHTED

The New York office of the U. S. Leather Company is now clearly illuminated by Sylvania Electric commercial fluorescent fixtures. This view is of the accounting department, where surface-shielded fixtures are mounted flush against the ceiling to provide a high-level, well distributed illumination.

SYLVANIA ELECTRIC

MAKERS OF FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES; ELECTRIC LIGHT BULBS; RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES

ELECTRICAL SOUTH is published monthly by W. R. C. Smith Publishing Co., Marietta, Ga., and Atlanta, Ga., U. S. A.
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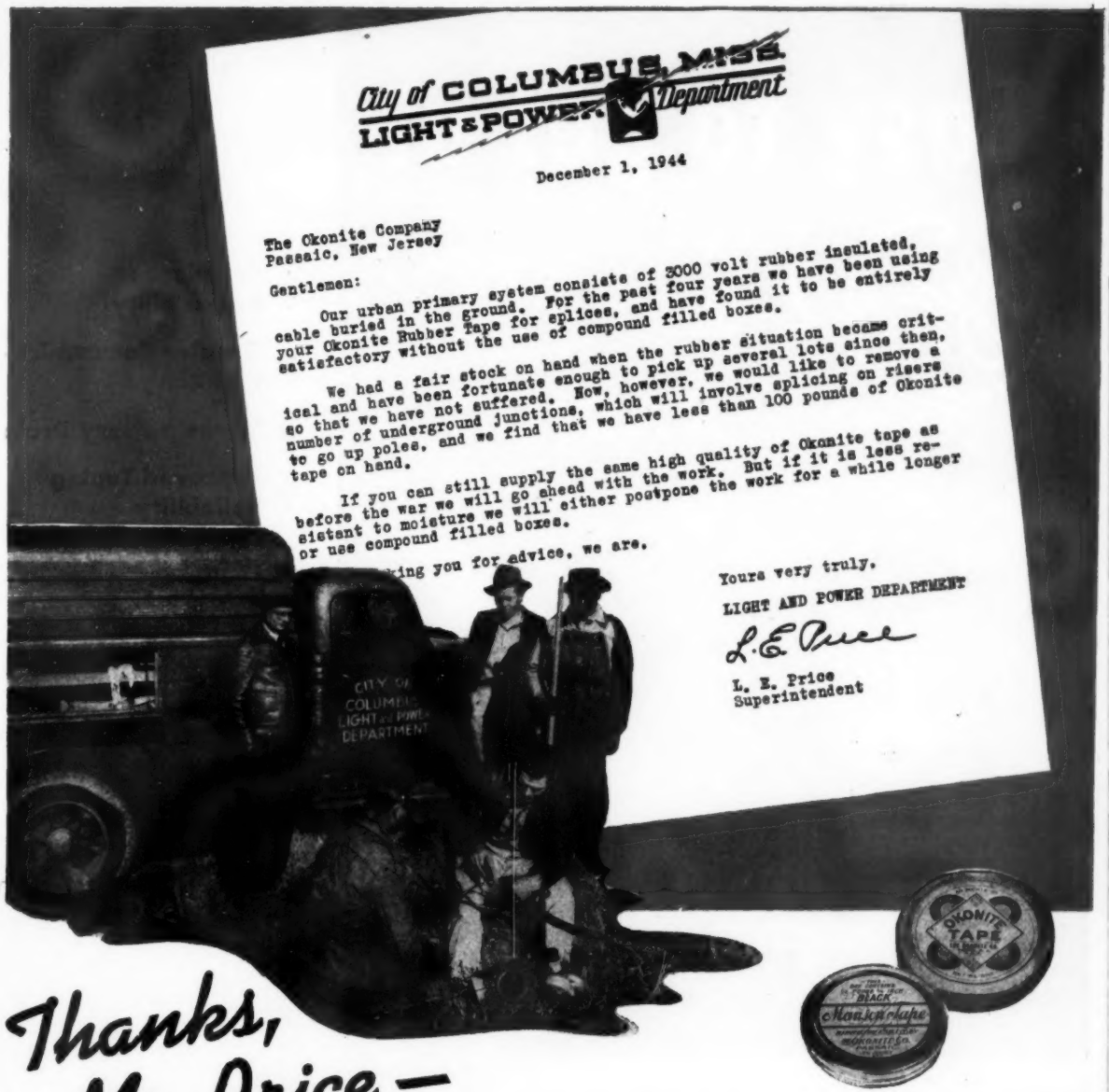
Volume 25 Number 10


City of COLUMBUS, MISS.
LIGHT & POWER Department
December 1, 1944
The Okonite Company
Passaic, New Jersey
Gentlemen:
Our urban primary system consists of 3000 volt rubber insulated, cable buried in the ground. For the past four years we have been using your Okonite Rubber Tape for splices, and have found it to be entirely satisfactory without the use of compound filled boxes.
We had a fair stock on hand when the rubber situation became critical and have been fortunate enough to pick up several lots since then, so that we have not suffered. Now, however, we would like to remove a number of underground junctions, which will involve splicing on risers to go up poles, and we find that we have less than 100 pounds of Okonite tape on hand.
If you can still supply the same high quality of Okonite tape as before the war we will go ahead with the work. But if it is less resistant to moisture we will either postpone the work for a while longer or use compound filled boxes.
king you for advice, we are.
Yours very truly,
LIGHT AND POWER DEPARTMENT
L. E. Price
Superintendent
CITY OF COLUMBUS LIGHT AND POWER DEPARTMENT
OKONITE TAPE
BLACK
Manson Tape

Thanks, Mr. Price—

We at Okonite like to get letters that tell us about good jobs done by our products. Naturally that goes for tapes as well as cables. And—also naturally—we like to get orders. Remain assured that in Okonite and Manson tapes we have consistently refused to use substitutes, and any such tapes you obtain are "the same high quality . . . as before the war."

But we haven't been able to fill all our orders for Okonite and Manson tape because of government restrictions on critical rubber. When Okonite and Manson tapes are again available to all, there will have been no let-down in what they have always offered utilities, railroads, and other industry. Long service life, for example, moisture resistance . . . better splicing . . . toughness and weathering qualities . . . in short, what it takes to give a joint the best insulation and mechanical protection that money can buy.

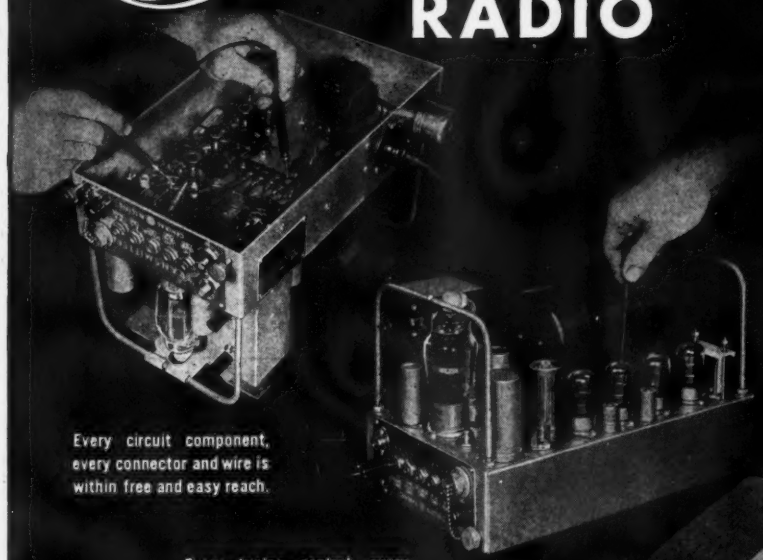
• When unable to obtain Okonite and Manson tapes, many of our customers are obtaining satisfactory results from our Dundee tapes or our Hazard Division's Panther and Dragon Tapes. The Okonite Company, Passaic, New Jersey.

OKONITE and MANSON TAPES
wherever electrical splices are needed

Easy to get at

2-WAY FM RADIO

- Complete Accessibility
- Greater Communication Range
- Lower Battery Drain
- Improved Tuning Reliability



Every circuit component, every connector and wire is within free and easy reach.

Every tuning control, every tube is completely accessible.

Complete accessibility of G-E 2-way FM radio sets a new high in equipment maintenance.

Here are the reasons.

- Every component and cable is easy to get at.
- Maintenance work requires no special tools.
- Each chassis can be inverted on its own sturdy workbench support for under-chassis inspection and servicing.
- Workbench support is removable for top-chassis inspection, circuit alignment, and tube replacement.
- All sockets and alignment controls are clearly identified.
- Chassis can be removed from permanently installed base plates simply by loosening two screws.
- Multiple test jacks on each chassis provide for direct and simultaneous circuit metering.
- All interconnections are quickly made with detachable plug connectors.

For additional information on G-E 2-way FM radio equipment or for help concerning your particular communication problem, see your G-E representative or write *Electronics Department, General Electric, Schenectady 5, N. Y.*

Hear the G-E radio programs: *"The World Today" news, Monday through Friday 6:45 p. m., EWT, CBS. "The G-E All-Girl Orchestra," Sunday 10 p. m., EWT, NBC. "The G-E House Party," Monday through Friday, 4 p. m., EWT, CBS.*

Everything for a 2-way radio

GENERAL ELECTRIC

163-D11-6818

When OVERHEAD goes *Underground*

Phantom view of socket and cone clamping element of the Mole.

MOLIMITER — gives Limiter protection to cables terminating at the Burndy Mole.

Assembly view of Mole. Insulating sleeves speed taping over terminal clamps.

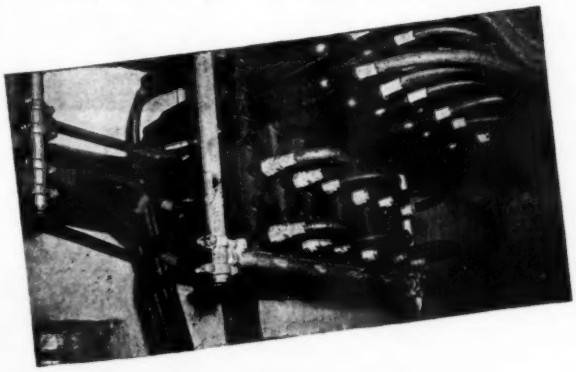
Rubber plugs stop off outlets not in use.

The Burndy MOLE

Provides economies — both Present and Future!

You will want to include the Burndy Mole* in your network plans. Thousands of these pre-insulated, multiple-tap connectors have been in use for years, under all kinds of operating conditions. Important features you will find in the Mole include:

- Maximum flexibility in both installation and service. Easy to rack.
- The number of feeders and taps may be increased or decreased with very little inconvenience. Rubber plugs stop off outlets not in use.
- Larger or smaller conductors may be easily interchanged.
- Mole outlets can be equipped with Molimiters for cable protection. See cut-away view.
- Moles are supplied with any number of outlets desired. Many variations available including Molestud Connectors for network protectors and transformers.



For complete details, send for Bulletin No. 6001. Burndy Engineering Company, Inc., 107-H Bruckner Blvd., New York 54, New York.

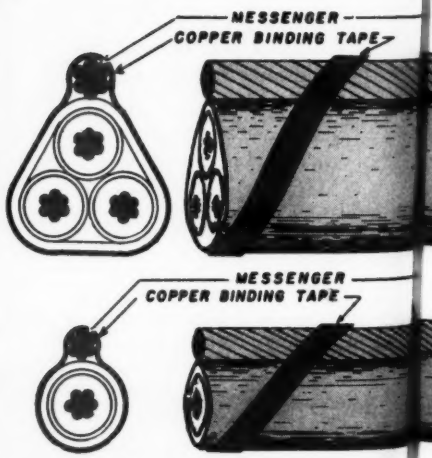
Headquarters for CONNECTORS

Burndy

* Registered U.S. Patent Office. Pat. No. 2,007,384.

DEVELOPED FIRST
BY

SELF-Supporting AERIAL POWER CABLE

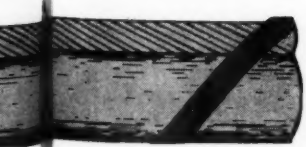


SELF-SUPPORTING
AERIAL POWER CABLE
2,300—15,000 VOLTS

MANIFEST ADVANTAGES

Factory-assembled complete. Simply draw up to sag. Tree-trimming eliminated. Self-grounded: Safe! Easy to splice, or tap. *Minimize Storm Hazards.*

TIN 1934
Y GENERAL CABLE



Non-leaded
Light in weight
Gencorone insulation

★ Now Available in Latest Improved Constructions and with Benefits of 11 Years' Operating Experience

Installed in our Research Laboratory Proving Ground, the original 1934 product proved itself through nine years' rigorous trial at double working voltage. The first commercial installation was made in 1939. Since then, many miles have been successfully operated throughout the country.

That Aerial Power Cable affords economy in the long run and a most desirable factor of safety against service interruptions and public hazard, and is well recognized particularly where tree conditions prevail. *Up to 65%* labor savings in installations, plus greatly reduced tree-trimming and maintenance costs, have brought the modern General Cable SELF-SUPPORTING Type to the fore.

It eliminates unsightly open wire construction and enhances street appearance materially in both residential and business sections. No tree surgery to mar attractive surroundings.

It is especially adapted to post-war service extensions where underground duct cost is not justifiable. Numerous utility installations bear witness to its notable superiority in mechanical strength and reliability. Great trees which have fallen across these cables, have been cut down and removed, and the cables pulled back to normal sag, totally without interruption of service. Company engineers will be glad to supply complete technical data.

GENERAL CABLE CORPORATION

General Cable Corporation Sales Offices are located at Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Houston, Kansas City (Mo.), Los Angeles, New York, Philadelphia, Pittsburgh, Rome (N.Y.), St. Louis, San Francisco, Seattle, Washington (D. C.)

LADIES' HOME JOURNAL

"The Best is always worth waiting for"

When only the best is what you want, you know you'll be happy with nothing else.

Your own experience in successful home-making is the best proof that you can rely on the quality of famous-name products. Now that Premier cleaners are back in the stores, remember that Premier *is* a famous name in cleaners . . . a name that has been justly earned over more than a third of a century.

Of course, enough Premier cleaners cannot possibly be made at first to satisfy the pent-up demand for them. If you are tempted to buy an unknown and unproved brand of cleaner, just because it happens to be the only one available at the moment, remember that it is always worth your while to wait for the best.

Any Premier dealer is ready now to give you a complete demonstration of a brand-new Premier . . . and to issue to you a numbered

PREMIER PRIORITY CERTIFICATE

This certificate entitles you to delivery of your new Premier in the order of your registration. When you buy a Premier—you know what you're getting. And when you buy it under the Premier Priority Plan, you know you will be buying it the advantageous way for you—"First Come, First *Reserved!*"

Find out where to get your new Premier as soon as possible by using the coupon below!

ELECTRIC VACUUM CLEANER COMPANY, INC., Cleveland 10, Ohio
THE PREMIER VACUUM CLEANER CO., LTD., Toronto, Canada

P.S. (*Premier Saving*) When you buy your new Premier from a retail store it will cost you $10 to $20 less than it would have cost if Premier maintained its own house-to-house "specialty" salesmen. Selling Premiers through retail stores *only*, makes this saving *yours!*

PREMIER
"All that the name implies"

PREMIER
ELECTRIC VACUUM CLEANER CO., INC., 1702 Euclid Av., Cleveland 14, Ohio
Please send me the name and address of my nearest authorized Premier Dealer, so I can take advantage of the Premier Priority Plan.
NAME _____
ADDRESS _____
CITY & STATE _____

. . . but you can *Sell* it *Now!*

True to its policy of "One to Every Dealer Before Any One Gets Two," Premier is delivering a demonstration cleaner to every Premier dealer. Now Premier provides a way for you to sell new Premiers *immediately*—for delivery as soon as you receive them. The Premier Priority Plan is based on the practical and appealing principle of "First Come—First *Reserved.*" Premier is focusing the attention of your customers on this Plan with the full force of all its national advertising. *The Premier Priority Plan will produce Sales for you now, and create customer Good Will that will mean continued Good Business for you in the future!*

The advertisement reproduced above appears in the November Ladies' Home Journal, the December Good Housekeeping and in the December 15th issue of The Saturday Evening Post.

Note the Coupon . . . and the P.S.!

DON'T FLY OFF THE HANDLE —

Safety Tip: **You know how tough it is to hang onto a hammer when the handle gets smooth and slippery. For a firm, sure grip, just wrap a few turns of Security Friction Tape on your hammer. Then notice how much easier it is on your hand—on your temper. You'll find, too, that Security Tape packs a lot of safety on many other jobs.**

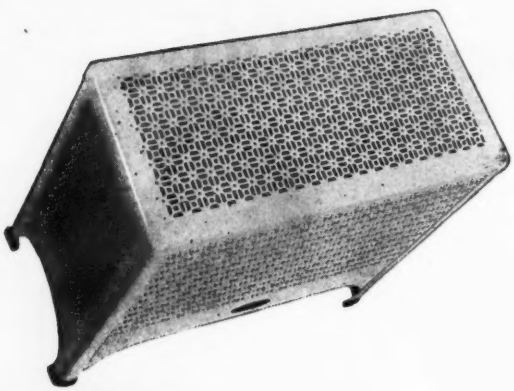
Play Safe — Use Security

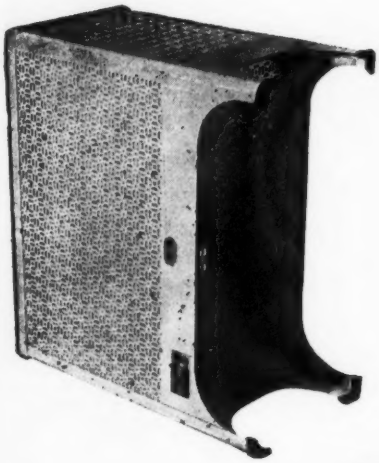
US

SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

1230 SIXTH AVENUE • ROCKEFELLER CENTER • NEW YORK 20, N. Y.





From Every Angle—

a Safe Heater ...a Proved Profit Builder

Trilmont SAFETY HEATER
RADIATES BLACK HEAT

SPECIFICATIONS:

19½ in. wide, 18¼ in. in height and 9¼ in. in depth . . . weight 19 pounds . . . wattage 1200 at standard household voltage (110-120) either AC or DC . . . Trilmont carries the Underwriters' Seal of Approval. Colors — Ivory or Brown.

MODEL "A"

Only $33 includes

- **DETACHABLE CORD SET**
- **FEDERAL EXCISE TAX**

At and West of the Mississippi, 95c extra

Not just another heater, but an entirely new principle of heating with household current. Non-glowing (black heat) coils which should never need replacement are incorporated in a dual-walled cabinet of exceptional design. These activate seven vertical air streams which result in a natural circulation of air throughout the room. No fan, no noise, no danger regardless of heater's position. Cannot burn children or fabrics in contact with the cabinet . . . The Trilmont is ideal for additional warmth in chilly rooms throughout the year. Available now! Be the first in your community to display and sell this revolutionary electric space heater.

Write or wire today for nearest Distributor

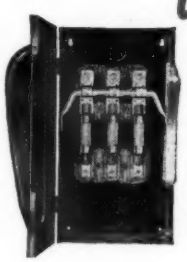
TRILMONT PRODUCTS CO.

WALNUT STREET AT 24th · PHILADELPHIA 3, PA.

"Super Tested"

Vacu-Break SAFETY SWITCH with "CLAMPMATIC" CONTACTS

Sizes for Every Switch Job



You take no chances when you install BullDog equipment in your plant. We "treat 'em rough" *before* they go to the customer.

The Vacu-Break Safety Switch, for example, has met every type of punishment we can devise in our own laboratories. This is why you can depend on the same BullDog *proved* quality every time, whether you need one safety switch or a whole battery.

Unique, quick action mechanism assures positive "ON" and "OFF" operation. "Clampmatic" contacts are tight as a bolted connection when closed, thus reducing heating. The exclusive Vacu-Break principle of arc extinction snuffs out dangerous arcs as quickly as they form.

DESIGNED TO STAY MODERN—capacities from 30 to 1200 amp. For types and sizes to meet your needs, consult your BullDog field engineer or write for descriptive bulletins.

BUY MORE BONDS

SALVAGE PAPER

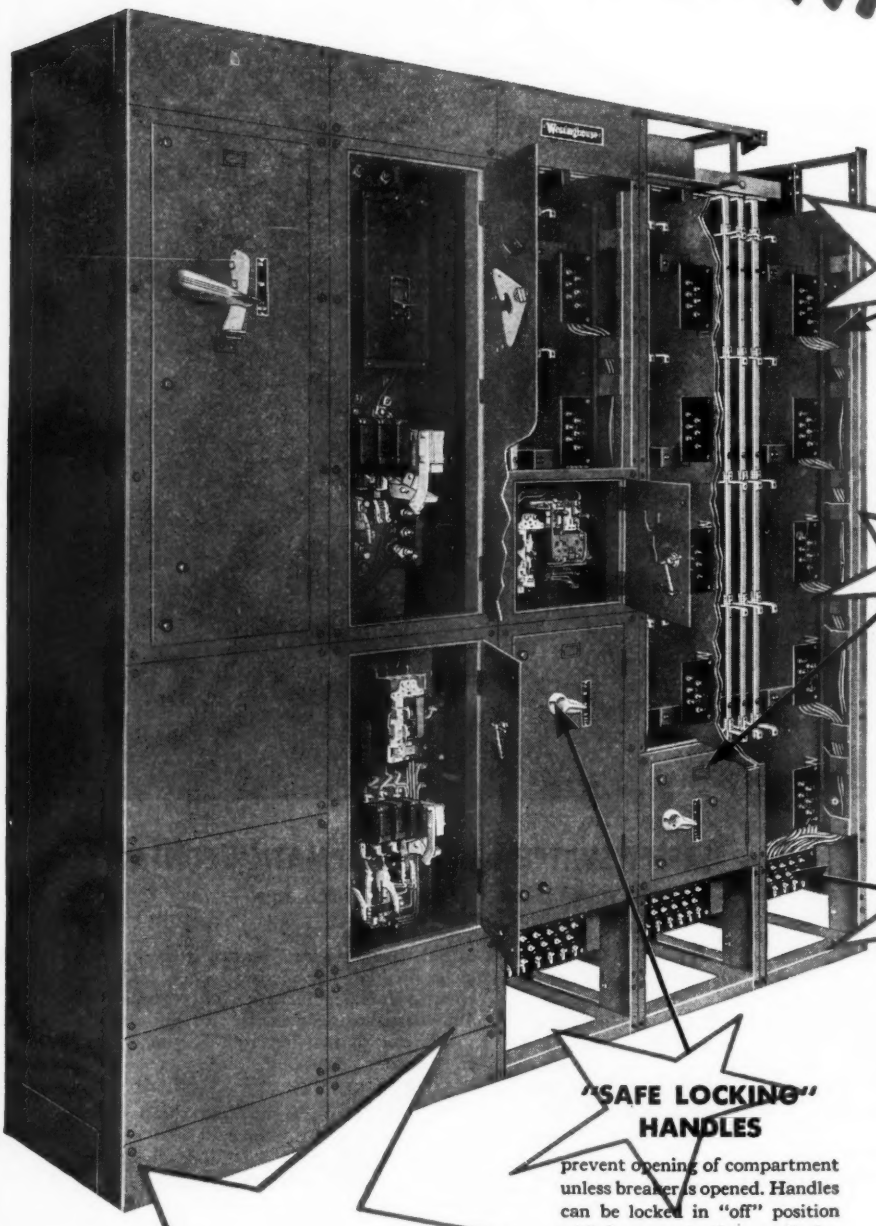
BULLDOG

ELECTRIC PRODUCTS COMPANY

DETROIT 32, MICHIGAN.
In Canada:
BullDog Electric Products of Canada Ltd., Toronto.
Field Offices in All Principal Cities.

Also Manufacturers of
SafToFuse Panelboards—Switchboards—Circuit Master Breakers—Universal Trol-E-Duct, for flexible lighting—Industrial Trol-E-Duct, for movable "loads"—BUS-tribution DUCT, for "Plug-In" Power.

Easier to install



ACCESSIBLE VERTICAL WIRING TROUGH

in each unit facilitates rearrangement of individual units and simplifies wiring, should master terminal boards not be desired.

STARTER UNITS EASILY REMOVED

from front of structure for relocation or maintenance—provides new operating flexibility.

MASTER TERMINAL BOARD

conveniently located at bottom (or top) of a control center, simplifies connection of outgoing leads. Individual terminal boards make wiring easy to identify, simple to change—connections between starters and master terminal boards made at factory.

"SAFE LOCKING" HANDLES

prevent opening of compartment unless breaker is opened. Handles can be locked in "off" position with from one to three padlocks.

FRONT OR BACK-TO-BACK MOUNTING

. . . twice the number of units can be installed without increasing depth of structure when back-to-back mounting is employed.

FOR ANY CONTROL CALL WESTINGHOUSE

WESTINGHOUSE

easier to maintain...

Application and operating flexibility of Westinghouse Control Centers saves man-hours in installation... and maintenance ... saves space with diversity of mountings.

A big reason why Westinghouse Control Centers are easier to install and maintain is simplicity of design. It simplifies control center problems from planning, ordering . . . down to the last item of maintenance. Regardless of the diversity of ratings required in one structure, a Westinghouse Control Center (built from standardized units) is available. There are three basic reasons for this flexibility:

1 *Standardized dimensions* of the main structure and of individual units. Size 1, 2, 3 and 4 linestarters are mounted in the same sheet steel structure—only section heights vary.

2 *Standardized terminal board system* simplifies wiring because all internal connections are made at factory—all outgoing connections are conveniently located on master terminal board at top or bottom of starter.

3 *Individual starter units* or sections can be rearranged quickly. Units can be installed anywhere in the structure, in any combination.

Because of this complete standardization... of every part... Westinghouse Control Centers result in much lower over-all cost than made-to-order multimotor control panels. These are only a few advantages of standardized prefabricated Westinghouse Control Centers. All units are standard Westinghouse control items . . . offering the benefit of the half century of Westinghouse control experience. For information, write your Westinghouse office. Ask for Booklet B-3026. Westinghouse Electric Corporation, P.O. Box 868, Pittsburgh 30, Pa. J-60599

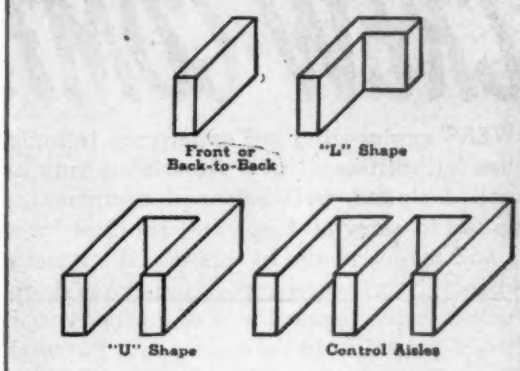
ALL INDIVIDUAL UNITS EASILY REMOVED

It's easy to remove an individual unit—a self-contained combination linestarter (circuit breaker and magnetic across-the-line starter)—just remove line and load leads and loosen four corner screws on trim. Entire unit then slides out for inspection or replacement. Each unit is completely baffled.

Only Westinghouse Control Centers Offer All These Advantages:

- Full installation and operating flexibility—all units 20 inches wide.
- Simplified maintenance, because of centralized, easily accessible controls.
- Smart, modern appearance.
- Standardized structures, permitting easy addition of control units.
- Full mounting flexibility. Starters can be mounted front only, or back-to-back.
- Complete operating safety assured by "safe locking" handles.

TYPICAL ARRANGEMENTS POSSIBLE WITH WESTINGHOUSE CONTROL CENTERS



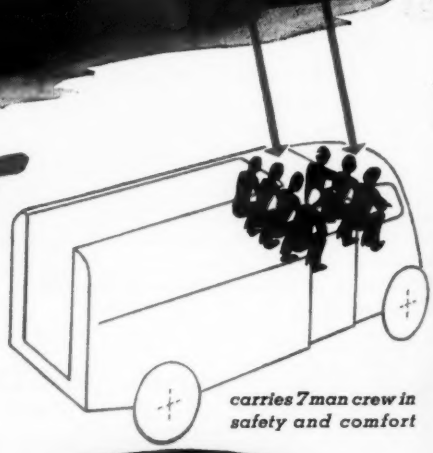
Westinghouse CONTROL CENTERS

POWERS

THE LINE BODY DESIGNED FOR EFFICIENCY AND

CREW COMFORT

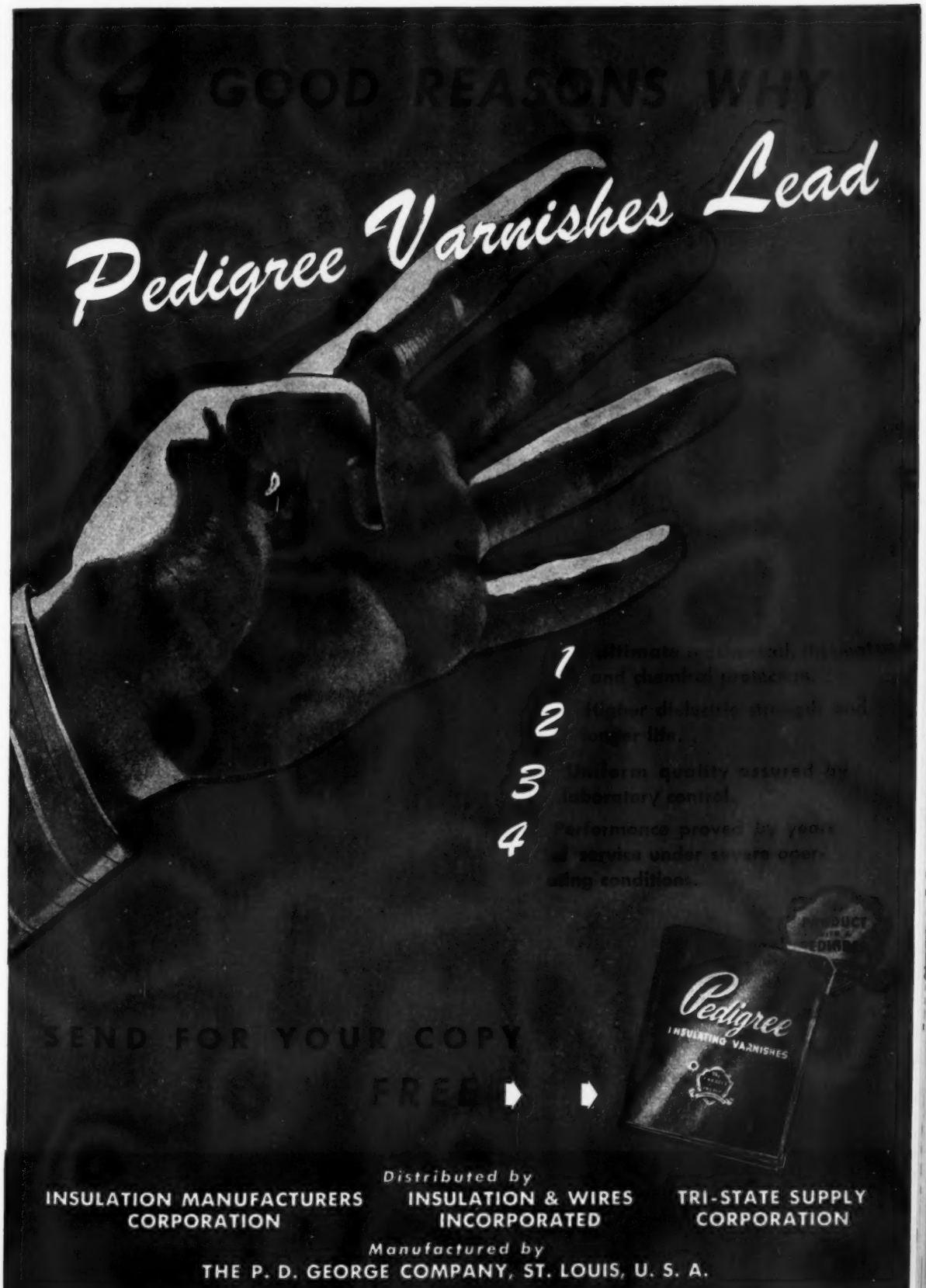
POWERS' engineering and experience in building line bodies for utilities all over America is your assurance of well-designed, well-balanced equipment, properly arranged to carry all tools and supplies for construction and maintenance. In this model special attention has been given to crew accommodations. A roomy compartment in the forward part of the body seats 4 men, while 3 more ride in the truck cab. For real help in engineering your line bodies, write POWERS today.



carries 7 man crew in safety and comfort

ALL-STEEL POWERS

McCABE POWERS AUTO BODY CO. · 5902 N. Broadway · St. Louis 15, Mo.



Distributed by

INSULATION MANUFACTURERS CORPORATION

INSULATION & WIRES INCORPORATED

TRI-STATE SUPPLY CORPORATION

Manufactured by

THE P. D. GEORGE COMPANY, ST. LOUIS, U. S. A.

Good Will

Headquarters for Mechanical Cooling since 1935," this Jersey distributor and engineer [illegible] full use of Commercial Credit facilities.

"Without any question, we have received from Commercial Credit Company a much closer co-operation on all our [illegible] transactions than from any other similar finance institution. We have had your sales representatives meet with our sales group and instruct them concerning good financing plans for our customers. Your credit and collection follow-up has always been satisfactory and you have collected collections for us always maintaining the Good Will of the customer. We do not hesitate to recommend Commercial Credit Company as the friendly finance company in this section.

"Proof of our feeling toward your concern is that now, as we are doing some post-war planning on our sales activities, we have called you in on the discussions."

Richard L. Hughes

Richard L. Hughes
ELECTRICAL PRODUCTS, Inc.
Jersey City, N. J.
Distributor of York Refrigerating and Air Conditioning Equipment.

COMMERCIAL CREDIT PLAN
THE PAY WAY THAT FITS YOUR PAY DAY

COMMERCIAL CREDIT COMPANY

BALTIMORE 2, MARYLAND

Capital and Surplus more than $65,000,000

PIN UP FEATURES THAT RING UP SALES OF
Samson
HEATING PADS
COVER 100% WETPROOF
Permanent Cover of "Fairprene," DuPont's durable, waterproof coated fabric. Edges and cord inlet sealed by vulcanizing. Safe for wet applications.
Genuine WETPROOF
4 SAFETY CONTROLS
Each of 3 Fixed Heats controlled by 4 precision thermostats — giving extra safety from overheating, keeping constant the temperature selected.
55 WATTS 110 VOLTS SAMSON HEATING PAD ELECTRIC HEATING PAD FOLLOW INSTRUCTIONS IN BOX
3 FIXED HEATS
Safe-T Circuit
Current automatically regulated to keep heat at temperature selected.
Low 125° Medium 150° High 175°
CUSHION COMFORT
New soft padding and improved cushion construction give restful comfort on pillowed heat.
EXTRA COVERS
Smartly tailored slip-ons of quality fabrics in attractive colors and patterns. "Zelan" water-repellent finish to resist stains.
"TOUCH TELLS" SWITCH
Even in the dark, a finger-touch tells if the switch setting is the one you want—Low, Medium, or High. Cord connections withstand tugs.
"ZELAN" TREATED COVER FABRICS
Cover fabrics treated with DuPont "Zelan," the water repellent finish that doesn't wash out. Resists stains. Will launder or dry-clean.
8 FOOT CORD
Gives a liberal freedom in moving the heating pad to different body contacts, and allows for the extra long reach to baseboard outlets.

No other heating pad offers so many sales-making features as Samson . . . and, of course, *only* Samson has the patented, time-tested Safe-T Selective Heat Circuit that assures customer satisfaction and safety.

We Are Participating In NATIONAL HEALTH AID WEEK October 5-13 1945

Samson Heating Pads are already in volume production . . . as are Samson Selective Speed Automatic Irons. Soon to come will be Samson Safe-flex Rubber Bladed Fans and Samson Variable Control Table Ranges. Watch for them . . . and for news of other profit-making Samson appliances.

BUY BONDS

ELECTRICAL SAMSON APPLIANCES

• Of course you wouldn't know, sonny. But it's a well-known name in certain circles . . . architects, builders and contractors know that Raco signifies a trade-marked line of All-Steel-Equip Company . . . the complete line of steel switch boxes, outlet boxes and fittings that are preferred the nation over.

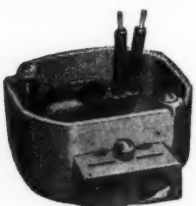
HERE'S WHY "YOU CAN ALWAYS RELY ON RACO"

No jagged or rough edges, no dirt or grease. Smooth, attractive appearance!

Every Raco product comes neatly packed in a good-looking carton . . . with a readable index showing number, quantity and finish.

The same exacting standards are used as in other precision products that All-Steel has been manufacturing for more than 32 years.

In addition to this, the Raco • All-Steel line is sold nationally through wholesalers only. Look for the Raco trade-mark . . . it signifies the quality line, the line that you can depend on.



For Non-Metallic Cable

THE JAY-KAY (J-K) BOX

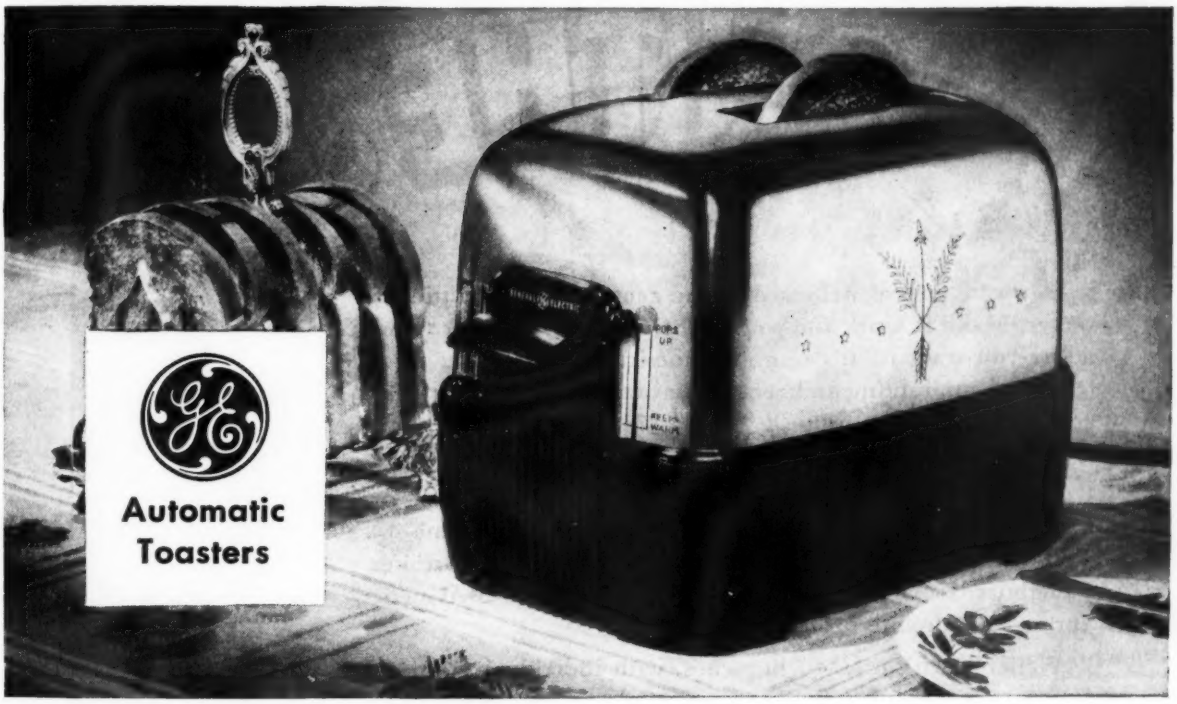
Made for "BX" but with bushing plate removed, it becomes a box for non-metallic cable. Supplied in 3¼" and 4" diameters. Boxes only, or assembled on bars; external clamps allow more wiring room. Use this box now when connectors are scarce.

For BX Cable

ALL-STEEL-EQUIP COMPANY, INC.
800 Kensington Avenue, Aurora, Illinois

RACO • ALL-STEEL • PRODUCTS
SWITCH BOXES • OUTLET BOXES

G-E TOASTERS *have the features women want!*



Completely automatic! Backed by strong national advertising!

Another General Electrical appliance is back in production—the G-E Automatic Toaster.

This new G-E marvel is streamlined, beautiful. And built into it is the priceless wartime experience gained in the many G-E service centers throughout the country.

Women Want G-E Appliances!

There's a vast market waiting to snap up these G-E Toasters. In fact, a recent survey showed that 53 out of 100 women think General Electric makes the best electrical appliances for the home.

These women have been reading about the G-E Automatic Toaster in big-circulation magazines. They've heard about it on the air. And they're pre-sold on wonderful features like these:

Pops up or keeps warm!

A little knob does the trick! Can be set so that the toast automatically pops up when it's "done," or stays inside the toaster—warm until wanted!

Every slice "as ordered"!

No matter what the user's preference—light, medium, or dark—the toaster can be set that way. Then, every slice—first to last—is toasted to exactly the same degree of golden-brownness.

New snap-in crumb tray!

Women asked for this feature, and *only G.E.* has it! A crumb tray snaps in and out in a twinkling—can be easily, quickly brushed off and replaced.

Get set *now* to cash in on this profitable, popular G-E appliance. See your G-E distributor today. General Electric Company, Appliance and Merchandise Department, Bridgeport, Conn.

"The Appliances Most Wanted by Most Women"

GENERAL ELECTRIC

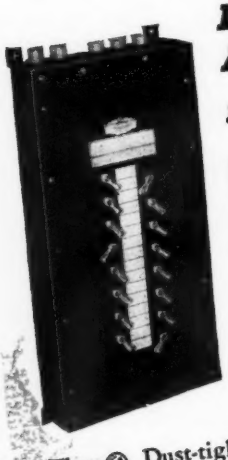
TELL YOUR CUSTOMERS to listen to Art Linkletter, in "The G-E House Party," every afternoon, Monday through Friday, 4 P. M., E. W. T., CBS.

Put your Panelboard "ON THE JOB"

Locate your panelboard in the center of the facilities it serves. Make it work for you by being accessible *when* and *where* you want it. It's more economical, too! Shorter electrical runs to lighting and receptacle outlets mean less wiring and lower voltage drop.

The (FA) Type AC THERMAG Circuit Breaker Column Type Panelboard is designed to fit 8", 9", or 10" H columns, or the narrow space between windows. This is the same (FA) THERMAG unit found in all (FA) Type AC Circuit Breaker Panelboards. The panelboard with the THERmal MAGnetic "brain" for double protection.

Available with 4 to 40 branches, with individual 15 to 50 ampere breakers, for single phase, 3-wire, 115-230 volts, or three phase, 4-wire, 120/208 volts solid neutral service. Tested by Underwriters' Laboratories for ten thousand complete operations.

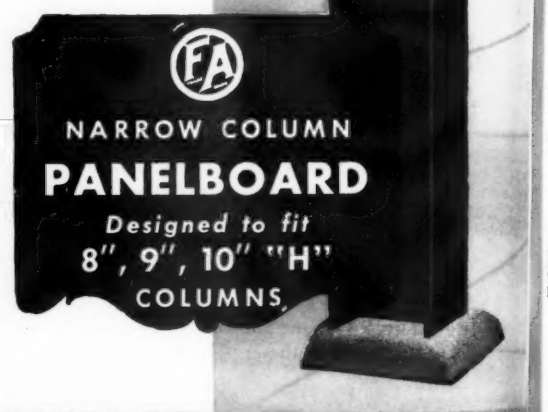


Dust-Laden Atmospheres need (FA)

DUST-TIGHT PANELBOARDS

Wherever coal dust, grain dust or volatile materials fill the air, electrical circuits must be spark-proof. If you need new equipment get it now. *Don't wait for trouble.*

The (FA) Dust-tight Panelboard for lighting branch circuits of 50 amperes or less, and power panels from 50 to 600 amperes, 250 volts AC or DC, 600 volts AC, is Underwriters' approved for Class II, Groups F and G hazardous locations.



Frank Adam
ELECTRIC COMPANY
ST. LOUIS

ELECTRICAL SOUTH

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A Friendly Word to ALL ESTABLISHED COOLAIR DEALERS . . . past and present

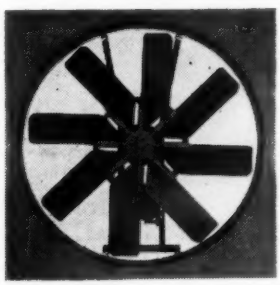
IF YOU want to handle Coolair Fans during 1946 you will profit by prompt action now!

Demand for Coolair Fans for the coming year promises to far exceed our production for 1946 even though we are increasing our volume as fast as materials and labor become available.

Coolair Dealers, past and present, must send in their stock orders for 1946 promptly if they are to benefit under our Allotment Plan designed to assure our old regular customers as many as possible of the fans they need.

Place your 1946 stock orders now with your nearest Coolair agent or distributor or with us for information.

Coolair TRADE MARK



Part shipments on 1946 stock orders will begin January 1 and we will try to follow your suggested schedule as closely as possible.

A FEW CHOICE TERRITORIES STILL OPEN!

Write for our NEW 36 page GENERAL CATALOG and information about the COOLAIR franchise.

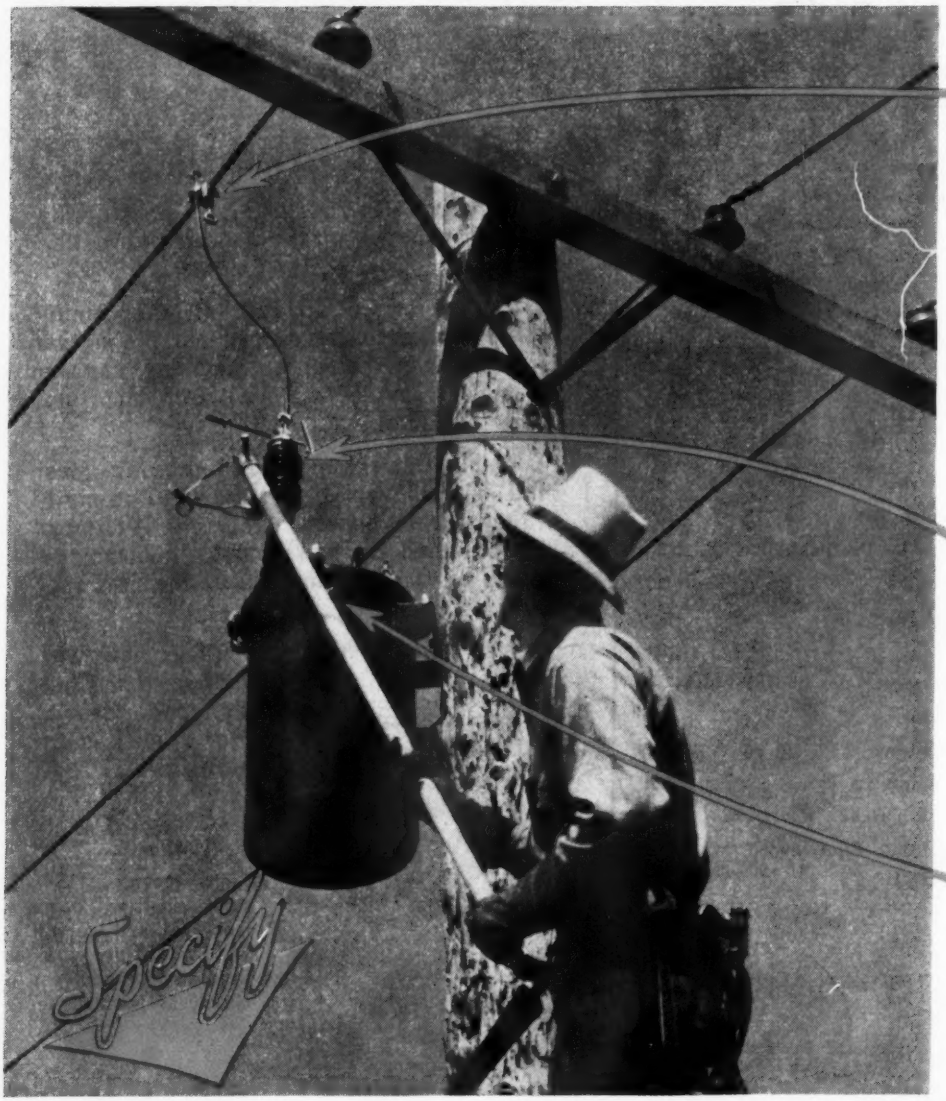
A full description of the Coolair line, with tables showing models, dimensions, performance data, etc., can be found in SWEET'S CATALOG, A.S.H.V.E. GUIDE, ELECTRICAL BUYER'S REFERENCE

AMERICAN COOLAIR CORPORATION...Manufacturers

3604 MAYFLOWER STREET

JACKSONVILLE 3, FLORIDA

Better Construction Today–
Less Maintenance Tomorrow



KEARNEY PROTECTED THREAD CON-NEC-TAP CLAMPS

These light, yet rugged clamps are ideal for making line connections that stay tight under all kinds of conditions. Highly resistant to corrosion and aging.

KEARNEY TRIP-O-LINK FUSE CUTOUT

Provides real efficiency for those who need low-cost, yet dependable protection. Provides speedy, positive link separation when a fault occurs.

KEARNEY HI-LINE DISCONNECT STICK

Laminated wood pole with ferrule type metal head, securely pressed and riveted on one end. Light in weight, yet will stand much abuse. Available in $1\frac{1}{4}$" diameter from 4' to 12' long; $1\frac{1}{2}$" diameter from 10' to 18' long.

KEARNEY PRODUCTS

MADE BY **JAMES R. KEARNEY CORPORATION** 4236 CLAYTON AVENUE SAINT LOUIS 10, MISSOURI

Fluorescent Maintenance Service

STORES, shops, and professional service specialists have long ago mastered a merchandising formula that is of potential value to the electrical contractor as well: the specialization formula. Just as one store will make sportswear its long suit, and one civil engineer the building of bridges –an electrical contractor in New Orleans has learned to specialize his work too for bigger profits and more enduring business. His specialty is a field that is wide open today for exploitation by alert contractors–fluorescent maintenance.

Although his Salem Fluorescent Maintenance Service has been in operation only since last February, Pat W. Bordelon points to scores of lucrative accounts which contract with him today for maintenance of their fluorescent fixtures. And the list of them is growing longer each week, as Pat Bordelon's merchandising, advertising, and selling methods add new names to it almost daily.

What is fluorescent maintenance? "It's just what the name says that it is," explains Mr. Bordelon. "It is complete fluorescent work from the bottom up.

"Take a case to illustrate," he continues, "say that we contract with a factory for maintenance service. Say that the factory has fifty fluorescents. We take over the factory owner's lighting worries. At regular intervals (they vary according to the set-up of the account from one and a half months to three months), we go into the factory, clean all the lights, metertest them for maximum effectiveness, change them over if they're burning low–giving less than the best light they can, repair sprung sockets, and generally do whatever is needed to see that the factory is well lighted at all times. If a lamp burns out between the inspection periods, we're on twenty-four hour call, seven days a week, to go out and replace it. All this is done for a fixed cost, usually contracted for on a yearly basis. In other words, the owner forgets all about his fluorescent lighting. We take over the problem for him–for one fixed fee."

This is a big field for the electrical contractor in the postwar period. At present, Pat Bordelon is the only contractor in New Orleans working exclusively on fluorescent maintenance. And it can be an even bigger field–but it takes much missionary work, for few users of fluorescent lighting are aware of the real need of maintaining its effectiveness.

How important fluorescent maintenance can be–and how it can save

A well equipped crew is necessary for profitable operation of a fluorescent maintenance business. The service truck shown is virtually a maintenance shop on wheels: ladders on top, all necessary tools, lamps, starters, sockets, and ballasts within easy reach. Note the advantage of sign advertising on the truck. (Photos courtesy of Sylvania Electric Products, Inc.)

It is amazing what soap and water applied by an expert mechanic can do to restore the reflecting surfaces of a fixture. Before the fixture is washed, as shown above, an electrician has checked the sockets and ballast to be sure all are operating satisfactorily. Note the platform type of ladder which provides plenty of room for the mechanic's equipment.

money for the contractor's customers—can be learned from the case of a large food produce concern which now uses Pat Bordelon's maintenance service.

Faced with dwindling effectiveness of its fluorescent system—which comprised some eighty fixtures—the company president called upon another contractor.

"No good. Burned out," said that gentleman, "You'll have to replace them completely."

The price he quoted the firm aggregated twenty-four hundred dollars—thirty a throw for completely replacing each of the eighty fixtures.

Twenty-four hundred dollars is a lot of money to replace a system only six years old. So the produce company president called upon Bordelon's organization to get his viewpoint.

Surveying this plant, its equipment, and its lighting problems, Mr. Bordelon was able to demonstrate graphically just how economical fluorescent service can be to the industrial user—a demonstration to the tune of a fifteen hundred dollar saving over the new installation price. That he could deliver the goods, Pat Bordelon proved to the account by repairing the old equipment so that it gave light as good—by the meter—as the other contractor's brand-new lamps. When, on top of this demonstration, Bordelon was able to offer a saving of almost two-thirds the first price—he had a customer whose account, large as it is, became more valuable because of the fact that he has recommended Salem Service to two friends who now also use it.

Few jobs, however, offer Mr. Bordelon such a gilt-edged opportunity to prove the worth of his service. Often selling it is gruelling missionary work.

"Very few of the users of fluorescent have any idea how much it costs them," he points out. "Once we can get the figures on what a man has paid for former slipshod maintenance, we can sell him by offering to produce a saving for him of fifteen to twenty per cent over sloppy fluorescent operation.

"For example—few users of fluorescent lighting have the slightest idea of fluorescent efficiency. By efficiency, I don't mean simply having the lamps burning. I mean getting the best possible light from each one. Most users let them burn long past their expiration dates—until the lamps no longer give light at all. They aren't aware that although the lights are burning, and are using as much power as they would under full efficiency conditions, they aren't giving the light they should. But we can show a man where he is wasting money in paying for fluorescent light he isn't receiving simply by using the meter. Plenty of prospects are shocked when they learn that their 40 foot-candle installation is giving only the light of a 12 foot-candle system."

Pat Bordelon gets much of his business by old fashioned leg work—using his legs to pound the sidewalks from office to office. When he goes in to sell a company executive on fluorescent maintenance service, he uses just such graphic demonstrations as pulling the meter out to show his prospect where power and efficiency are being wasted.

But you can't build a big service business by pounding the sidewalks all the time, and Pat knows this. He also knows a lot about the effectiveness of advertising in putting over a new idea. So he is presently using newspaper space, to the tune of at least an ad a week in the three New Orleans papers.

A typical Salem Fluorescent ad is headlined: "Maintenance Service." The selling copy explains that: "An increasing number of fluorescent users are relying on our specialized Fluorescent Maintenance Service. We take over the whole job of keeping your installations in perfect condition at all times by periodical inspections, replacements when needed, repairs, or any other needed electrical service. It won't cost you a cent to get the facts. Give us a call and we'll come out and

The final operation in maintenance—replacing the lamps. Once more these fluorescent fixtures return to their original function—to sell merchandise. The lighting in the entire store has been brought up from about 50% to peak efficiency. And good efficiency will be maintained, for this store is now under contract and will be regularly served by expert crews.

Store appearance can be measured by store appeal. Maintenance of lighting equipment can do more to maintain store appearance than any other operation. A carelessly maintained lighting system can breed carelessness in all other operations. Stock clerks working under maintained illumination are encouraged to be neat in arrangement of stock. Even the floor sweeper will do a more thorough job keeping the floors clean. Both customer and employee morale is maintained at peak performance. These are the sales points used by Mr. Bordelon in selling his service.

give you an estimate." As an inducement to the reader to call without waiting, the phone number is shown in heavy Gothic type.

Supplementing the Salem Fluorescent Maintenance Service newspaper campaign was a very effective series employing direct mail. Just how effective it was may be seen by the high percentage of buying returns: nine per cent—which compares with the fact that big national advertisers are exultant when they receive a five per cent demand for free booklets.

The direct mail campaign took the form of three selling letters. Designed to operate as a unit, the three tied-in to each other. The last, for example, reminded its readers that the Salem company could service just so many accounts while plagued by shortages, and that even though its list was growing long, it had reserved a place for the recipient of the letter, if he acted quickly. This fillip in the third letter helped it to draw in the greatest number of inquiries of all. Each letter inclosed a postage-paid reply card, which needed merely to be checked and signed. Readers of the letters were reminded that a survey would be made without charge.

The success of any direct mail campaign lies in the effectiveness of the mailing list it employs. Knowing this, Pat Bordelon put his legs to work once more in securing his list, personally checking restaurants, offices, factories, and stores which used fluorescent and so might be natural prospects. His mailing included not one dead name.

"It was a lot of work," he reports, "—but it was worth it. I knew exactly how many lights each man on the mailing list had!"

His customers include every conceivable type of industrial, commercial, and even private users of fluorescent. One is the big Blue Plate Foods factory in New Orleans. Another is one of the city's largest super markets. Others are in large downtown office buildings, in warehouses, plants, factories, storage places, neighborhood stores—and even homes. For it is a principle with him that the dollar-and-a-half customer gets exactly the same prompt, cheerful service that the big time operator receives.

His price is based upon several factors. These are: the number of lamps and the number of hours each is used; how many times each is turned on and off; the light intensity called for in the lighting engineer's original blueprint; the nature of the account (restaurants and other food establishments need service at shorter intervals because of grease and dust collection on the lamps); the condition of the equipment at the time a survey is made—indicating how much immediate work will be needed; and the wattage of the lamps.

Mr. Bordelon's flat price for maintenance (by contract, usually for one year) includes the immediate work to be done, the cleaning, repairing, replacing, and inspection services, and all labor and materials used. That his price represents a saving to the buyer is indicated by the fact that a great number of his customers recommend his service freely to other prospects.

There is a big field in what Pat Bordelon is doing. And there is room for at least one fluoresecent service contractor in every community, he believes. He points out the fact that the electrical equipment companies which helped him are ready to assist contractors with advice, technical twists, and equipment needed to provide such a service.

Good Plans Now — More Profits Later

Demonstration booths featuring merchandise in specific price ranges is one plan of Price's, Inc.

THE MERCHANT that does the best guessing now about electric appliance trade-ins, home demonstration policies; who has a modern financing plan, modern sales plan and has begun to chart the pitfalls he expects to find on the way—is very likely to be one of the merchants that makes a nice profit and survives the intense competition which reconversion is rapidly bringing to the door of every establishment.

"Selling electric appliances is a highly competitive business and persons who can make a success of it are the same persons that could make a success of a super market or a drug store." Thus spoke H. B. Price, Jr. president of Price's, Inc., who have electric appliance stores in Norfolk and Portsmouth, and have just opened two stores in Richmond, Va.

Their first store started as a hardware store with appliances later as a sideline in Norfolk in 1905.

They have sold washing machines for 19 years and probably sold the biggest volume in the South. They sold 1700 washers of one make in 1941. To do that they used 125 demonstration machines.

There is no substitute for experience in business and consequently the words of Mr. Price and what he thinks about the future of the appliance industry may well be taken as words of wisdom based on lessons learned the hard way in the past.

"Some of the answers are not even known by the large appliance manufacturers themselves," Mr. Price continued . "Many of them are groping in the dark. What I think is my own opinion and may be right or wrong when the time comes that we can use the hind sight."

Washing machines are sold by demonstration. Prospects are dependent on the per cent of saturation of the market. Sound sales are dependent on the earning capacity of the market, their bill-paying qualities. Profits are dependent on margin of profit in the product, trade-ins, service, and amount used up in sales such as home demonstrations.

It takes a lot of the profit to make home demonstrations. Some merchandise such as late model enameled washers and refrigerators are not sturdy enough to take the constant hauling from one house to another. Enamel chipped off a washing machine cannot be put back successfully and it finally ends up a battered and hard-used machine that is sold at a give-away price. All of this comes out of the profit. A 41 per cent margin is almost a minimum, Mr. Price believes for doing business along those lines.

While Price's in their Richmond "Household Appliance Center" already have an auditorium and demonstration kitchen, and a full-time home economist, Mr. Price reports that this space will have to give way to the display of merchandise because it is too valuable to use for a home demonstration kitchen.

Price's downtown Richmond outlet is located in the Arcade building in the heart of the business district.

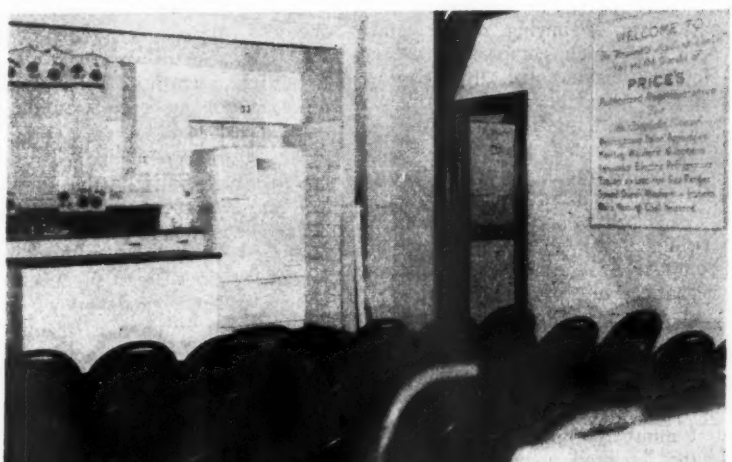
To those who expect to go into the electric appliance business Mr. Price advises them to do as he did before opening the Richmond store.

There are agencies available who will chart and survey the trading area in any city. Mr. Price had the saturation per cent determined on washing machines, refrigerators, stoves and other appliances before he opened the store. He learned how many people pass his location and what their preferences are in regard to appliances. He learned how many people in Richmond owned washing mashines, what kind they were, and what their preferences were and what their earning capacity or income averaged.

Mr. Price said that until a product has a 60 per cent saturation, it has to be sold on a missionary basis. Between 60 per cent saturation and 85 per cent saturation point the public has accepted the product and the trade-ins will not be a problem. After saturation has reached 85 per cent nearly every customer has one of the product of some make and he wants to trade it in for as much as he can get.

Here again, according to the experience of Mr. Price, if the profits are to be tied up in trade-ins, then the dealer must have some provision for servicing, rebuilding, and selling the trade-in.

His survey showed them that the saturation point on refrigerators in Richmond was about 82 per cent. The



A corner of the demonstration kitchen and cooking school auditorium which is a part of the downtown Richmond store of Price's, Inc. Chairs will be removed, and merchandise displayed here.

saturation point on refrigerators is high everywhere and for that reason there will not be as many refrigerators sold as many of the experts foresee, according to Mr. Price. For instance 5,000 refrigerator sales may easily bring in 4,000 trade-ins and the dealer may have to recondition and sell more than 3,000 of them.

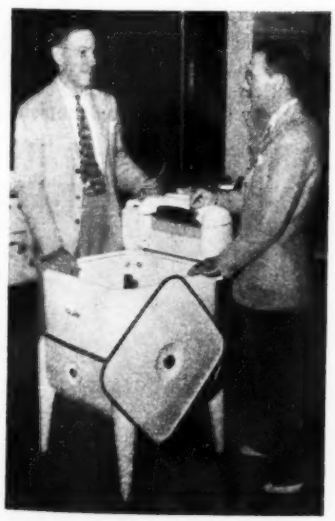
For that reason Mr. Price is of the opinion that the dealer who does not maintain his own service department, competently manned and equipped, already has two strikes against him.

Trade-ins do not offer much of a problem to the Price organization because they are equipped to overhaul and rebuild completely and expect to sell their trade-ins from a separate store.

Mr. Price said, as an example of service, that they have been doing a complete overhaul on Maytag washers for $12 when the ceiling price allowed has been in the neighborhood of $25. Many dealers are doing the job for the latter price but they are not making friends doing it. Price's have been holding to the $12 price and in order to do it have had to maintain a large volume of work, and volume is profitable.

Home demonstrations may be a thing of the past, in the opinion of Mr. Price, who said he thought that the margins are going to be too slim to go back into the extensive home demonstrations as they were given before the war.

An entirely different plan is going to be put into effect by Mr. Price.



Left: H. B. Price, Jr., president, and W. A. Moore, Richmond, manager, of Price's, Inc., discuss a new model washing machine. Economic reasons will tend to make the washing machine more popular than ever in the South.

Demonstrations will be held at the store in booths. Replicas of ordinary kitchen and basement washrooms will be reproduced in booths in the store. Laundry tubs, kitchen tables and the most simple of home laundries will start the booths. Each booth will go up higher in the scale and contain more equipment.

This is based on the idea that you can sell a customer up but it is hard to sell him down after it is discovered that he doesn't have enough money to buy the products. This means a lost sale and time wasted.

Salesmen will be picked with the utmost care. A sales promotion manager will keep things humming. The salesman, when he calls on a prospect, will have a method by which he can determine about what the customer can afford to buy in the first five minutes of the conversation. The salesman arbitarily puts the woman in a certain class and he then invites her to bring her clothes down and have them washed on the washer in the booth. If she is able to buy only a washing machine and stop, that is all that will be demonstrated to her. She will not see the automatic washer and the automatic drier.

She will be given a neat clothes bag to put her clothes in and they will be used in demonstrating the machine. When she decides to buy the machine, a second survey of her financial status and credit standing will be made with the idea of finding out whether she can stand some combination payments and handle another item. It may be possible that she can handle an electric water heater. All customers will be sold if possible all the appliances their income will permit them to buy, but under no circumstances will this company invite repossessions. Repossessions always cost money and lose customers and prospects. They should be avoided as much as possible by making good sales in the first place, Mr. Price said.

When it comes to demonstrating washing machines, Mr. Price, himself has been through the mill. He said he had demonstrated washing machines in the rural areas where he had to build a fire under a pot out in the yard. His demonstration washing machine was unloaded in the yard and the gasoline engine with which it was powered had to be tied to a tree because the ground was so soft.

The washing machine market in the South will be fully developed during this postwar era, Mr. Price thinks. For a good many years the northern section of the country has been the best washing machine selling ground.

H. B. Price, Jr., president, Price's, Inc., with appliance stores in Norfolk, Portsmouth, and Richmond. Mr. Price stresses the importance of the saturation per cent in the trade area.

This has been due to economic reasons. The South has always had plenty of Negro help and people of moderate incomes have had maids and cooks.

The Southern Negro now has come into money of his own. Many of them are excellent prospects for washing machines and electric appliances of their own. They have left the white folks kitchen and laundry room for the factory, the restaurant and the store.

Southern families are feeling the pinch of doing for themselves and when they are sure it will continue that way they will buy all the electrical appliances they can find that will lighten the labor and shorten the day.

Many of the old Southern families have not given much thought to the washing machine. Since the laundries fell down so badly during the war and may not be back on their feet for months to come, progressive households will install washing machines as a measure of independence against the uncertainty of the laundry and the uncertainty of having help.

Price's downtown Richmond store has a demonstration kitchen which seats about 75 people. Since they opened in November, they have put the auditorium to patriotic use by allowing the Red Cross to conduct cooking schools for the benefit of service men's wives. These meetings were held twice a week. Several other non-profit organizations were allowed to use the hall and the equipment.

For the first period after merchandise is again available they will con-

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REWIRING OLD RESIDENCE IS PROFITABLE IF YOU MAKE IT A COMPLETE JOB

MENTION rewiring an old house to the average electrical contractor, and it will send chills up and down his spine.

Old houses almost always lead with a left—there are almost always obstructions in the walls that sap the profits out of the job, and crooks, turns, and corners around which no self-respecting piece of conduit should be sent, and where even a midget couldn't install non-metallic cable.

Not the least of old house wiring troubles is the usual unwillingness of the owner to spend an appropriate amount of money—enough to get the job done right.

When these common-place facts are reviewed, it is refreshing to find a contracting firm which has solved some of the most vexing problems in wiring old houses and not all of these problems have to do with the mechanical chore of getting a pair of wires from Point A to Point B without tearing down the house.

First comes salesmanship. Charles Adams and M. Parker, co-owners of the Rolla Electric Appliance Company, Rolla, Mo., are both agreed that a complete job needs to be sold first.

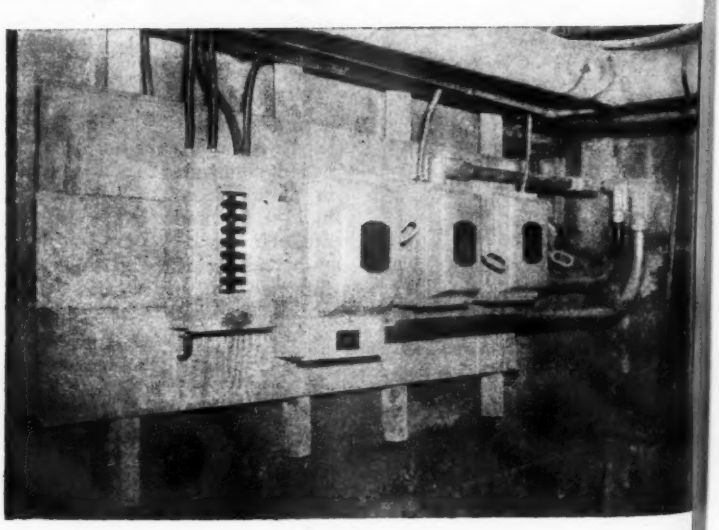
And the contractor really has something to sell. The prospect for an old house rewiring job is usually an owner who is remodeling and will add additional electrical appliances to already overloaded wiring. What he wants is a "fixit" job.

Wiring of considerable age, as the electrical industry well knows, has been added to and changed and experimented with by electricians and by amateurs. An electrician called in to add a couple of wall sockets is usually rebuffed immeditely if he suggests that some of the wiring needs repairing. The owner will tell him quickly that it is working, and it is not causing any trouble which is all any job can do.

The operators of the Rolla company anticipate these difficulties. They explain all these things to the prospect, make a survey of the entire job, and then make a recommendation and a price.

They point out to the customer the advantages of new wiring over old — hundreds of houses in Rolla are wired by the knob and tube system — advantages such as safety from fire. Adding safe lines enclosed in conduit and providing new overcurrent protection and fully enclosed switches, is better protection than the insurance policy.

Convenience should be stressed. Switches may be placed where needed, outlets can be placed exactly where they should be, and numerous



Typical of some rewiring of old houses handled by the Rolla Electric Company is this old house which was converted into three apartments with electric kitchens. Space for a doctor's office on the first floor was wired for X-ray equipment. (Below) This business-like panel board in the basement replaced a jumbled rat's nest of knob and tube wiring.

automatic gadgets can be installed to make living more pleasant.

One of the latest jobs which they have sold in this class was the rewiring of a three-story residence, which was bought by a doctor. He converted the building into three apartments and space for his offices and an X-ray room.

As an example of convenience, he had all the hall lights wired into a time clock which turns them on at the proper time in the evening and turns them out in the morning. This completely solves the problem in an apartment house of hall lights and ends disagreements before they start.

This job was sold as a rewiring job with the understanding that all of the old wiring was to be either removed or abandoned. All of it was knob and tube. They removed all they could get to and then cut and pushed the remainder out of sight and out of the circuit behind the walls.

In a rewiring job, there is always a serious huddle about where to put receptacles, with electricians sometimes losing sight of the ball and telling the customer he can't put them in such and such a place because a two-by-four is in the way.

It's a selling point in selling an old house job to point out to the customer that they can have everything they want where they want it. Sell them a complete job instead of a patchwork quilt.

In the doctor's house no consideration was given to the placing of switches, outlets, and lights except the desire of the owner.

They put in four circuits on each floor. Circuit breakers were installed in the basement for each floor, designed to handle the lighting load and electric range load. Electric range outlets were wired in each kitchen in exactly the best place for the stove.

One of the things which must not be overlooked in a rewiring job, according to the owners of Rolla Electric Appliance Company, is the furnace installation.

This job had an oil burner with automatic electric control. It had a high pressure shutoff operated electrically. The only trouble was that an inspection of the wiring disclosed that if the boiler had reached the danger point, the automatic shutoff would have failed to operate and conceivably the house would have either been blown up or burned down.

One of the kitchens showing where electric range is to be located. Mr. Parker, co-owner of the Rolla Electric Company, points to the range outlet. The circuit breaker panel is shown above the range location.

Charles Adams and M. Parker, owners of Rolla Electric, examine the control wiring of the heating plant. All wiring had to be removed and the unit rewired on this job. This is a matter that should always be given consideration in any rewiring of an old residence, these men suggest. Usually it will be found that much patching and repairing on such systems by a number of people will have made complete rewiring necessary. In this case, it was found that the high pressure safety alarm was completely inoperative.

Selling a completely new wiring job on the furnace was not hard because the facts were easily presented to the owner.

Contractors should remember that furnace installations are sometimes the victims of three or four organizations. One man puts in the furnace. Another man installs a stoker or an oil burner, and they hook up the electrical circuits as they please. This leads, as we all very well know, to the use of original and astounding hookups at times.

When it does not work properly, a repairman comes and changes a few wires and runs a jumper from here to there and tells the owner to watch it carefully as he will return soon and do the job right—and permanently.

Every old house has had dozens of these temporary repairs. This house was no exception. By selling the complete job of doing it right from bottom to top, it made a profitable contract instead of a repair job that was not only makeshift but being such

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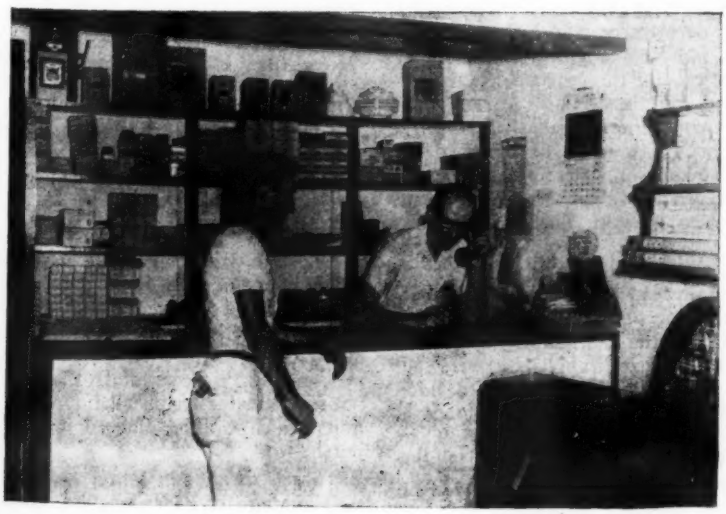


Interior of Rolla Electric Company, Rolla, Missouri.

Allocation of First Appliances Delicate Dealer Problem

ONE of the largest appliance dealers in the South, Maison Blanche Company, in New Orleans, is taking a "wait and see" attitude toward the knotty problem of allocating its first few refrigerators, washers, radios, vacuum cleaners and air conditioning units. But along with its policy of waiting until the situation becomes clearer, Maison Blanche has laid down two clearly defined rules, that are still flexible enough to twist into any situation that develops.

(1) Maison Blanche customers, the store has decided, will be kept fully informed of the entire situation, when and as it works out. To accomplish this, the store plans to run large newspaper ads as public relations plugging, explaining the appliance situation of the moment and the Maison Blanche store policy toward it—how many of each item it has, and how it will distribute to the thousands who clamor for them.

(2) Maison Blanche will handle a complete line of appliances, with one of its main pushes on package air conditioning.

Take the customers into your full confidence, give them the full facts of the situation, Maison Blanche reasons, and they'll be more likely to sympathize with your troubles than to berate you for theirs.

Stated in one sentence, the Maison Blanche policy is to make consumers partners in the store's appliance headaches—by means of full fact-giving advertisements.

To Promote Air Conditioning

Besides refrigerators, refrigerating equipment, and air conditioning—the last two relatively strange merchandise for a department store to sell—Maison Blanche intends carrying multiple lines of radios, washers, vacuum cleaners and even pianos.

One of New Orleans' large department stores, Maison Blanche has always been a big time operator in the electric appliance field. As appliances become available in full volume, it hopes to be a still bigger operator, and it has ambitious plans for merchandising many new items in a streamlined department.

But the store is waiting to see what situations develop before it lays any definite plans, just as it is waiting before it announces a customer allocation plan. The success of both merchandising and allocation schemes depends on many things which are not yet clear, store executives point out. These include:

When will electrical merchandise arrive in volume? *How much* will there be at first, and how quickly will production be able to pick up to demand? *What*, exactly, do consumers want in their postwar electrical products that were not in the prewar appliances?

Until answers to these questions are available, it will be impossible to make definite plans that do not include a generous dose of headache, Maison Blanche executives claim. Interested as they are in what the score will be, consumers, they reason, are even more interested. Therefore, they're planning institutional appliance advertising in order to keep their good customers, who have clamored these four years for new appliances, right on the informational beam—when and as they themselves receive information. The result—they hope—will be increased consumer good will and decreased chances for making customer enemies of the buyers for whom there will be no merchandise at first.

Where the Maison Blanche appliance department before the war covered most of an entire selling floor, plans call for the postwar department to be split up. The purpose is to merchandise related items together.

The entire range of major appliances was once grouped together. Now, rather than an arrangement splitting logically allied merchandise into separate divisions, Maison Blanche will split the appliance department instead to achieve related merchandising opportunity.

Under the old setup, housewares, china, and small appliances were sold on the Maison Blanche third floor, and such naturally related goods as washing machines on the fifth. There was no opportunity for suggestion second selling of minor appliances to major appliance prospects.

Now, when the appliances do arrive and the store can go all out in promoting them, customers will find appliances stocked next to their related lines. The system will give opportunity for second selling, and boost traffic—that old volume booster—for all lines.

Displayed alongside the housewares and minor appliances will be refrigerators, home freezers, package air conditioning units, washing machines, vacuum cleaners, and other working appliances.

Located on the Maison Blanche fourth floor will be the musical merchandise: radios, record players, and pianos. These will be merchandised together with the existing record department, boosting traffic and increasing customer convenience in buying musical merchandise. Prospects for radios will be wide open to suggested selling of related phonographs and separate record players—and, in addition, records. Record customers will be exposed to a look at the newest and best in radios and phonographs when they come to buy.

Home Freezers To Be Sold

Two new items on which Maison Blanche executives rely for big postwar sales will be strange appliances for department store selling — home freezers and package air conditioning units.

They look for a vastly expanded market for the freezers. New Orleans housewives, they say, want them, judging by the volume of inquiries they receive. They'll be sold alongside refrigerators—again, in related selling.

New Orleans' sultry summer weather is expected to be an important selling ally for putting across their package air conditioning units. Sales were just beginning to open up for these in New Orleans when the Japs struck at Pearl Harbor and production ended.

Now, there is a large demand market for them from consumers ready to buy the instant merchandise returns. These are principally customers who need them for cooling offices. In addition, Maison Blanche is looking for an expanded home air conditioning market.

The store will not go into air conditioning engineering. Being a department store, it plans merchandising along the lines it is best equipped to do. Maison Blanche envisions a booming trade in package units that do not require extensive installation work; units which can be plugged in and put to work.

To sell all these, Maison Blanche is planning to have separate sales

(Continued on page 30)

All-Electric Kitchen Pays Its Way

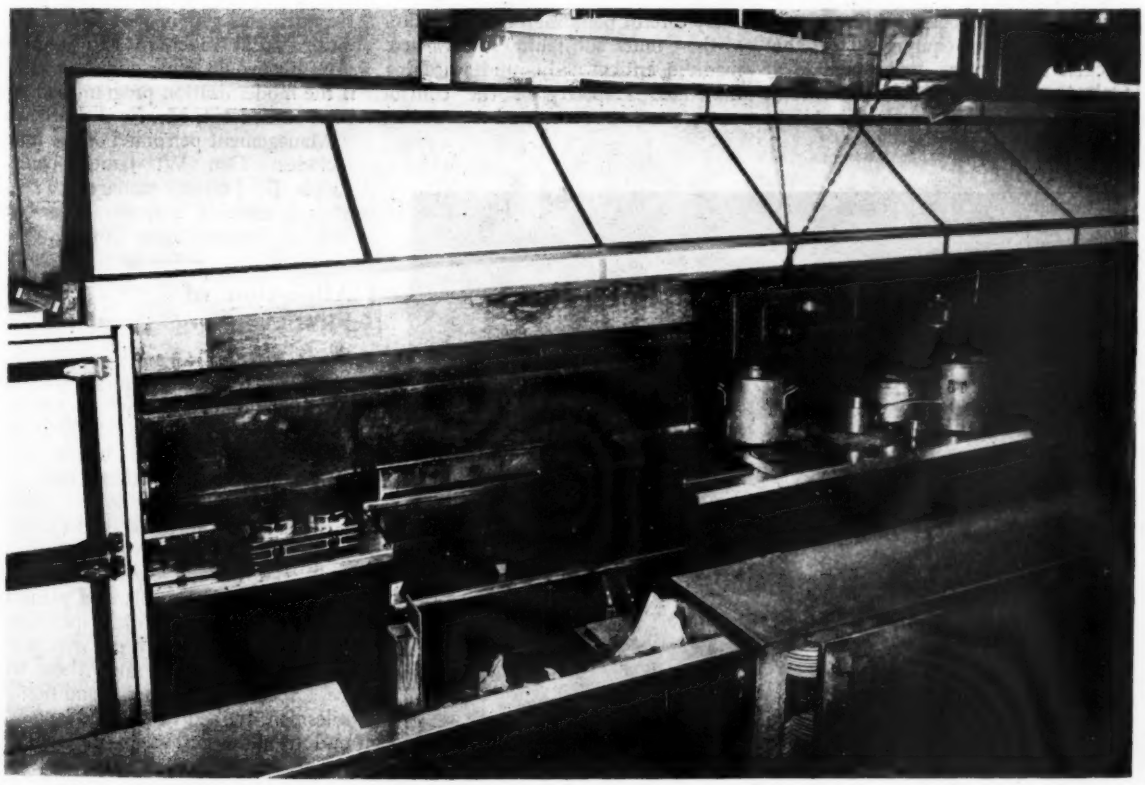
Cleaner, faster cooking, cooler kitchen, elimination of moisture, soot and grease from walls and appliance surfaces are among advantages claimed.

THE TEST of a year's operation has proven that the all-electric kitchen installed in the Black Hotel, Oklahoma City, Okla., has measured up to all expectations. The first of its kind to be established in Oklahoma City, the Black Hotel installation has resulted in many inquiries and has served as a model for several other all-electric commercial kitchens in the state.

About a year ago the Black Hotel management began considering improvements in its kitchen to replace some natural gas cooking equipment which was becoming old and inefficient. The Oklahoma Gas and Electric Company, of Oklahoma City, which serves about 240 cities and towns in Oklahoma and Eastern Arkansas with electric transmission and distribution facilities, offered to cooperate with electrical contractors and equipment dealers in presenting the advantages of electric cooking to the hotel management. Through B. C. Spencer, O. G. & E., commercial cookery department manager, the utility offered free consultant and engineering services to the hotel and electric contractors.

A few small electric appliances had been in use at the hotel for several months. By watching their efficient operation and consulting with experts, the management was convinced that a conversion of the kitchen should be made to electrical operations. T. G. Stargel, progressive catering manager, then made a study to determine how electricity could be used most economically in the hotel. He found that the maximum electric load came between 8 and 10 P. M. when the lighting requirements were added to those for air-conditioning, refrigeration and other operations. He then secured the whole-hearted cooperation of the chef to keep the main cooking load off the lines during the peak-demand hours.

"This enabled us to keep within the 75-kilowatt demand and take advantage of the 6 mills per kilowatt hour rate," Mr. Stargel said. "Thus we improved the overall power factor



Convenient and compact arrangement of electrical appliances was achieved in this all-electric kitchen installed for the Black Hotel, of Oklahoma City. The ranges shown here are located directly above the control switchboard located in the basement. Two industrial type fluorescent fixtures are to be seen just above the range canopy.

from 78 per cent in September 1944 to an average of 87.13 per cent per month for the nine months succeeding. This means that we have been able to eliminate the power factor penalty, which is effective when this factor falls below 80 per cent. This and other economies make it possible for us to serve a greatly increased number of customers at an average cost of one mill per meal for electric current."

Expressing pleasure over the whole all-electric kitchen operation, Mr. Stargel continued: "The changeover has brought many advantages. These include cleaner and faster cooking, a 30 per cent cooler kitchen, elimination of moisture, soot, dirt particles and grease from wall and appliance surfaces, and more healthful operation."

The electric appliances and equipment were placed in the kitchen in one night, after closing and before opening hours. These included: one Edison two-deck electric oven, Model N.222, built into a recessed wall, tiled flush with the door; one G-47 Edison heavy service griddle; one Model G-28 Edison counter griddle; two three-foot Edison electric ranges, with Salomander broiler, mounted on top of one of them; and one Model K-32, 25-pound Edison fry kettle, with special extended top for baking with ranges.

Older electric equipment in the kitchen and storage room include a Colt Autosan dishwasher, a Griswold hotplate, Toastmaster electric toaster, roll warmer and egg broiler, a Blakeslee dishwasher, blue polished iron work tables and serving tables, one Kelvinator three-door reach-in box and a 32-foot by 38-foot walk-in box used in preserving meats. A 40-foot by 50-foot cooling room is used for preserving vegetables.

The Osborne Electric Company, Oklahoma City, Marvin R. Osborne, owner, played an important part in the Black Hotel electrification by planning to take care of a heavier load without general re-wiring. Instead of tearing out and replacing the old switchboard, this was left on the wall in the basement and four sections of a control center were installed on the floor about three feet from the panel.

A lead from the 1200-ampere bus on the old board was connected to the new control center. This control unit was placed directly under the main electric appliances in the kitchen above. A 4-inch duct was run from the control center to the basement ceiling. Wires were entered through the floor from this duct to the two 15-ampere waffle irons, two 20-ampere toasters, a 35-ampere deep fat fryer, a 25-ampere hot plate, the two 70-ampere ranges, with a 35-ampere Salomander broiler mounted on one of them, and to the 35-ampere oven.

By careful planning of the location of these units, substantial savings were made in critical wiring and switching materials. Capacity of the control center may be increased by adding new sections to meet future demands for heavier loads. Regrouping of circuits is possible even after the board is installed and in full operation without interference with adjacent units.

The Osborne Electric Co., with cooperation of Oklahoma Gas and Electric Co., engineers, placed in the kitchen 12 fluorescent fixtures with two 40-watt lamps in each unit. These replaced old drop-cord incandescent lamps and greatly increased lighting efficiency in the kitchen.

Waste space adjoining the main floor lobby was converted into the beautiful Empire room, which adds about 100 seats to the dining capacity of the hotel. In perfect harmony with the Baroque style decorations in this room are the luminous tube lamps cleverly concealed in coves and corners to give colorful, subdued and restful illumination. This room is available to diners making reservations for individuals, small parties and business organizations. Other dining rooms include the coffee shop, Silver lounge and dancing room. Dining room capacity of the hotel is sufficient to serve about 400 persons at one time. An overage of about 3,000 meals per day are served at this time.

Ralph E. Fowler, manager, said that the business of the hotel has tripled within the past three years. He attributes this in part to war conditions. But much of this business probably would have gone elsewhere if the modernization program had not been carried out, Mr. Fowler believes.

Management personnel of the hotel includes: Dan W. James, owner; Ralph E. Fowler, manager; T. G. Stargel, catering manager, and Neil White, manager, Silver Lounge.

In addition to its all-electric kitchen, the Black Hotel's Empire Room has utilized the soft glow of recessed luminous tubing to accentuate the beauty of its Boroque style decorations.

Allocation of First Appliances

(*Continued from page 28*)

crews of specialists. Under the old system, one man might sell refrigerators, washers, and radios, all in the course of a single day. A jack of all trades with each of these lines, he was not equipped to answer highly technical questions and to do technical selling.

Instead of one electric appliance sales force, Maison Blanche plans to use several, one for each specialized line of appliances. To put over package air conditioning sales, there will be a special crew of air conditioning salesmen, trained to talk the language and to show customers—in technical detail if necessary—the how and why of installing it.

For each appliance line, there will be a specialized sales crew.

How To Light an Office

By W. E. Folsom
Illuminating Engineer
Dallas Power & Light Company

WORK BEHIND schedule, errors discovered too late, mistakes in filing, workers with headaches and strained eyes—these problems and others which reduce employee efficiency may be solved or at least helped by providing better seeing conditions in the office. "Better seeing conditions" may automatically suggest a new lighting system to most of us and good lighting does help employees do better work; however, a new lighting system is not necessarily the whole answer.

There are four factors to be considered before right seeing conditions can be reached. The four factors are: (1) The task, or what we see; (2) the eyes, with which we see; (3) the light, which makes it possible for the eyes to function; and (4) the surroundings, or the background against which the task or object is viewed.

Office work usually involves continuous rapid discernment of detail over relatively long periods of time. Such operations as reading handwritten or printed matter, transcribing shorthand notes, bookkeeping, drafting, filing, and operating various types of office machines are examples of tasks which vary in the seeing demands placed on the worker.

Little can be done about the tasks themselves because they represent the work to be done; but, in many cases the nature of the work determines what should be done about the other factors involved in seeing in order that desirable results may be obtained.

Some seeing tasks are easier than others. For example, black ink either printed or handwritten on soft-finish paper is easier than on glossy paper. Pencil notations on yellow or other colored stationery are more difficult to read than on white paper. The degree of contrast between the characters and the paper on which they are printed or written determines the difficulty of the task. Printed characters are easier to read than handwriting. The more difficult visual tasks require higher levels of illumination for best seeing results.

The eyes — the human organs of sight — deserve and should receive the very best possible care. Few people have perfect vision. It is known that over 80 per cent of the children who leave elementary school have eye defects which distort vision. Findings of from 80 per cent to 100 per cent of office workers having visual defects are not unusual. Most defects in the human eyes, however, can be compensated for by the use of ap-

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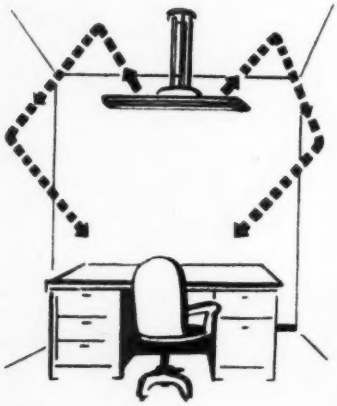
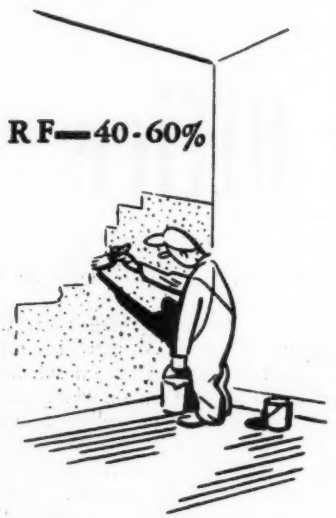
This is another article in a series discussing the lighting of interiors for specific types of commercial, industrial and institutional installations. The photograph at the top of the page shows recently installed lighting in the accounting department of Tampa Electric Co., Tampa, Fla. Lighting intensity was 45 foot-candles four months after installation. Wakefield Grenadiers were installed in continuous rows, 7'-9" apart, and 11' above floor.

Ceilings and floors should be light. If possible, finish the ceilings in flat white in order to reflect as much light as possible. Light color finish for floors will increase the efficiency of the lighting system considerably.





Walls should be natural in color. Pale green is especially good.

propriate lenses in the form of glasses.

The first step in reaching right seeing conditions should be to make sure that all workers who have visual defects are equipped with proper corrective lenses in order that their eyes may function properly under the lighting system provided. Because office work usually involves sustained eye work of a relatively severe nature, office workers should make a practice of consulting competent eyesight specialists at fairly regular intervals. In this way, refractive changes within the eyes may be discovered and corrected before serious eyestrain develops.

Everything which makes a conscious or subconscious visual impression on a worker constitutes his visual environment. An office employee concentrating his attention on work confined to a desk top actually sees many objects outside the small work area. This fact is often proved to a worker as he suddenly becomes conscious of objects or people moving within the area out in front of him which constitutes his broad field of vision.

Extreme contrasts in brightness anywhere in this visual background should be studiously avoided. Glare from a sunlit window, from a bare incandescent lamp bulb, or from a bare fluorescent tube burning within the worker's field of vision is a cause of discomfort and can cause actual harm to the eyes.

An employee's efficiency is also reduced if high intensity lighting level is used in the immediate work area while the surrounding area is left in comparative darkness. For this reason, low brightness contrast ratios, as recommended by competent illuminating engineers, should be maintained.

The following elements which form a prominent part of the visual environment in an office should always be taken into account when planning for optimum seeing conditions.

The ceiling normally serves as a secondary light source (particularly with an indirect lighting system) and should be finished in flat white to reflect as much light as possible. Avoid glossy paints because the shiny surfaces cause specular reflection of lights which not only lowers the over-all efficiency, but is apt to create harmful glaring conditions.

The walls are important because they are usually the background against which the task is viewed. Walls should be finished in light colors having reflection factors of from 40 per cent to 60 per cent. When colors having higher reflection values are used, the walls become too bright in contrast and detract the worker's attention from the task. Lighting units, or luminaires, should not be placed so near a wall that the concentration of light would cause the wall to become an annoying source of glare. For the same reason spots of sunlight on office walls should be avoided.

Walls should be natural in color. Pale green has been found universally satisfactory. The colors to be used in the office should be selected under the type of lighting which will be used in the final installation. The reason for this is that a color viewed under incandescent lighting appears different when seen under fluorescent light. In order to get proper diffusion of light, flat paint should be used for wall finish.

The lighter the finish of the floor covering, the higher the efficiency of the lighting system. When a direct-type of luminaire is used, it is particularly important to have light colored floors and desk tops to reflect light back to the ceiling and help relieve brightness contrasts between the luminaires and the ceiling.

Work Surface Treatment

The top surface of desks in the usual office is the working plane on which most tasks are performed. A shiny or glossy finish on desk tops should be avoided whenever possible. Glossy surfaces reflect directly the light from luminaires or other bright spots in front of the worker and make it almost impossible to avoid glare. This creates a seeing condition which causes eye strain and loss of efficiency.

Dull bleached wood is usually satisfactory and a mottled, light gray linoleum desk top has been found very suitable. As a temporary expedient, light colored blotters may be placed over dark or glossy desk tops. Glossy varnished surfaces may be dulled with fine steel wool. In cases where glossy surfaces cannot be avoided, the position of the worker at the desk should be adjusted so that reflections from bright light sources are reduced or eliminated.

Bright light sources or reflecting surfaces should be eliminated entirely from the field of vision. Framed pictures, doors of enclosed bookcases, or glass partitions are often sources of reflected glare. In all such cases, either the glaring objects should be removed or the position of the worker should be altered so that the reflected glare is no longer in his field of vision. Sky or sun reflections from adjacent buildings are often annoying glare sources.

As pointed out in previous paragraphs, many factors enter into the design of "lighting for seeing" in an

office. Assuming that walls and ceilings have been properly treated, desk tops colored for best results, and other factors determined, arrangement of luminaires is next considered.

In small areas such as private offices, it is desirable that luminaire and desk be arranged in such relationship that the light comes to the working area from the rear or from one side of the worker. In many offices placing a luminaire at each side of the desk is desirable. The purpose is to prevent the reflection of light from surfaces in the work area back into the eyes of the worker.

The problem in a large or general office is to place luminaires so that the whole space is lighted uniformly. Luminaires should be located outside of worker's field of vision or, where this is impossible, desks should be placed so that lights are not directly in front of worker's eyes. Luminaires should be installed or the workers positioned so that the lowest brightness area of lighting equipment is exposed to vision.

In designing any lighting system the nature of the task, the condition of the worker's eyes and the required speed and continuity of vision as well as the visual environment should be carefully appraised.

Lighting Intensity

The amount of illumination needed will depend upon the age and condition of each pair of eyes employed, the variety of tasks which they will be called upon to perform, the nature of the general visual environment and the type of lighting system to be used. Older workers as a rule require a higher level of light than younger workers for the same ease in seeing. The more difficult visual tasks also require higher intensities of light for equal ease of seeing.

For general office work, correspondence, and other ordinary seeing tasks a minimum general illumination level of 25 foot-candles is suggested by the "Recommended Practice of Office Lighting," published by the Illuminating Engineering Society.

For more difficult visual tasks involving poor contrasts or the discrimination of fine detail, such as transcribing notes, tabulations, bookkeeping, and business machine operation, a 50 foot-candle level is recommended. When the higher levels of light are employed, it is particularly desirable that the entire visual environment be studied in order that excessive brightness contrasts in the field of vision may be avoided.

Luminaires are available in a wide variety of types and designs during normal times. However, wartime conditions have checked the rapid growth and development of office lighting equipment, particularly in the field of fluorescent lighting which is of comparatively recent origin.

The lighting engineer must give consideration to factors other than the lighting system and the wall and ceiling surfaces. An otherwise good installation may be spoiled by improper deck tops. Shiny, glossy surfaces are to be avoided as well as very dark desk surfaces.

All light sources, either incandescent or fluorescent, should generally be shielded with diffusive material such as glass or plastics, or the illumination should be entirely indirect, thus removing the light source entirely from the field of vision.

The first requirement in selecting a luminaire should be that it is built so as to shield workers' eyes from the source of light. This is of special importance in offices because workers normally sit for long periods of time in performing an operation confined to a small work area.

The ceiling height and size of the room may become determining factors in the selection of the proper luminaire. With luminaires using incandescent bulbs, either totally indirect or semi-indirect types are most desirable. With luminaires using fluorescent tubes, the semi-indirect type, properly shielded, seems to be most desirable.

Effective use may be made of daylighting through windows. Lighting intensities out-of-doors, however, are very high in comparison to those indoors and certain precautions should be taken.

No one should work facing a window directly. When eyes are adjusted for indoor intensities, out-door glare is extremely uncomfortable.

When a person sits with his back to a window the work in front of him is shadowed. It is better to turn about 130° from the window so light comes over one shoulder – the left for a right-handed person, the right for a left-handed person. This position assures the best use of daylight.

It is not unusual for a lighting system to lose 30 per cent to 40 per cent of its output through the accumulation of dust on lamp bulbs and lum-

(Continued on page 88)

These sketches demonstrate proper use of daylight in an office.

Manpower and Machine Shortage Still a Motor Shop Problem

TWO OF the electrical motor shops industry's problems, problems born of war conditions, have been largely solved at the Union Electric Company's shop, Mobile, Ala. The two problems are manpower shortage and machine and equipment shortage.

Moving into a new building and opening a modern motor shop at the same time brought the shortage of machinery and equipment into sharp focus. Moving always means expansion. Their old equipment was not adequate and in many cases new equipment could not be obtained—for instance, J. B. Lee, shop superintendent, has had coal winding equipment on order for months and expects to get it within the next six. What he has built in the meantime, to use while manufacturers are building new equipment, is the reason for this story.

Man has always made the machines but it takes time for a boy to grow up to a size to work in a motor shop—help now is scarce everywhere, but in a critical area such as Mobile, it is more difficult to obtain.

Brookley Field, located at Mobile, is a central repair plant for airplane motors and they are shipped to it from many states. The personnel there is plentiful and encompasses men of the highest mechanical skill. But out there are patriotic men working outside their trades, who have converted the skill they had in other lines, temporarily to the uses of their country.

Many of these are motor men. By special permission and arrangement, these motor men can work their regular hours at Brookley Field and then work 30 hours at regular rates of pay at the regular trade.

Several motor men work for Union Electric on this basis. They work four and five hours a day, either day or night, to alternate with their shift at the field. No reference card is necessary. These men are of the highest type because they are usually family men who are looking forward to employment at their regular trade in the future. In fact, Mr. Lee, shop superintendent, said they expected to have these men on a permanent basis when their work is no longer needed.

That is one source of skilled labor. With a certain amount of skilled labor in a motor shop, Mr. Lee said you can mix a certain amount of unskilled or apprentice labor, and as long as the ratio does not become overbalanced, you can get along.

One good turn deserves another. So since the patriotic motor men at Brookley Field felt they could come in and do their bit in the shop, Union Electric felt they would like to help all they could and so they fell in line with the federal and state rehabilitation program, whereby men who may be physically deficient in some particular, may come into the shop and learn the part of a trade they are most capable of doing under competent instruction.

The federal government has first cognizance of these men through draft board listings when they are unable to pass physical examinations for the armed forces. From there they are turned over to the Mississippi state vocational schools, from which they are allowed to become apprentices under a rigid control system.

Union Electric has several of these men and all are performing their work, learning fast, and are always cheerful and a good influence in the shop.

The company has to report on their progress to the state, and a complete record is kept by both the electric

(Above) Shop-made winding machine being operated by one of the rehabilitation students. (Right) A shop huddle: left to right, Mr. Pete, Mr. Lee, and Mr. Byars.

company and the state. "These men," Mr. Lott, president, said, "have been a great help to us in the labor shortage and we are going to do everything we can to teach them a trade that will make them self-sustaining and independent."

With the manpower problem at least partly solved, the next was machinery. First they needed an oven to bake their coils and since their motor jobs run into a flock of horsepowers, even up to fifty or more, they needed a pretty good sized one.

Mr. Lee obtained some gas burners for heat and built a cabinet of steel, 6 ft. x 6 ft. x 6 ft., and lined it with asbestos. Under working conditions it operates perfectly from 225 degrees F. up to about 500 degrees F.

Then there was the matter of getting a vat in which to dip the coils. Mr. Lee got an old steel hatch cover from a shipyard, made a counterbalance so the heavy steel hinged lid would be easy to operate, welded in a steel bottom, and there he had as good a dipping vat as money could buy. He added a rack on which the impregnated coils are hung to drip.

The tank is 3½ feet deep and 3½ feet in diameter and big enough to handle the largest coils they get.

The rewinding machine was built from odds and ends and was used to supplement their factory machine. He put a cable driven counter on it, and it has adjustable coil blocks for all sizes of coils and turns out a good day's work along with the rest.

When they moved into their new building, Mr. Lee put up a traveling hoist at the wide back door, which runs out into the yard some 25 feet. Trucks drive up under this hoist and unloading of heavy motors or reloading for delivery is only a matter of minutes.

They also built a small crane, into which was incorporated a wire rope winch for handling small poles, which is needed on some of their jobs.

There was the matter of adding some bearing pressing equipment to what they already owned.

This was particularly needed for heavy motors and large sizes, so Mr. Lee built one outside, using as the force exerting mechanism, a large screw jack such as the kind used to raise houses. This was welded into the top of the press frame. Although inexpensive, this has become an indispensable tool. A large hydraulic jack and press is under construction for even greater capacity.

An important project now under way in the shop is a direct current marine department. Mobile is a seaport and while most ships have both alternating and direct current, many of the smaller boats only use direct current. This makes such a department necessary in the shop.

They have decided to add a complete marine department for the rebuilding and overhauling of marine generating units.

Needing a direct current source of their own, they are rewinding an old motor generator set to furnish them with ample supply, at both 110 volts and 220 volts.

Union Electric Company is located in a new building at 706-08 S. Washington Avenue, Mobile, Ala. T. J. Lott is president, J. B. Lee is shop superintendent, and H. R. Bryars is construction superintendent.

J. T. Lott, president and manager of Union Electric Company, Mobile.

Shop-made baking oven which has a temperature range up to 500° F.

Traveling hoist at backdoor facilitates handling of heavy motors.

A student under the rehabilitation program for physically deficient. He has been an apt pupil.

RETAIL STORE OPERATING CONTROL

BUYING and selling are two vital functions of the retail operation, which bring profits into the appliance and housewares store, but unless adequately supported by proper control operations, retailers may dissipate profits resulting in a lower net profit for the volume secured.

Through control operations, dealers can be abreast of their business at all times and prevent profit dissipation. Maintaining records of every phase of the buying and selling operations is an important part of the control job. This means making the proper original records at the time the transaction takes place and maintaining a set of books which will be simple, inexpensive, easy to keep up and will give dealers the facts they need every day.

Good personal records should also be kept so that dealers may know which of their employees are efficient, which inefficient, and why. Store's expenses must be carefully controlled. Payroll, rent, advertising, supplies and services and other operating costs can be kept in line only through wise planning and careful budgeting.

Dealers must also protect customers, employees, and the store's investment, and this can be done best through adequate, practical records which are the foundation of the control job.

After actually determining what to buy and where to buy it, the dealer completes the buying cycle by placing his order. To properly carry out this third step in the buying act it is necessary for him to set up the right systems and records for receiving and stocking income goods.

For profitable operation, an appliance dealer must at all times have his business under control. That is, he must chart his course, steer in a straight direction, and at all times know exactly where he is! His business changes every day, yet every day he must know where he stands—what has come into the business—what has gone out of it.

There are two control tools that enable the dealer to get and hold control of his business. They are: (1) organization and, (2) records.

In order to demonstrate the importance of these factors in the operation of a small store, we will review the minimum essentials for proper control. As a small store merchant, your organization job is particularly important. There are many necessary buying, selling, and operating jobs involved in running your business. Each of these jobs must be planned, coordinated, and executed efficiently. You must see that all of these jobs get done, yet, unless you are operating your store alone, you must not try to do all of them yourself.

Your first step in organizing should be to think through and plan each necessary job . . . that is, make an organization chart of your own store.

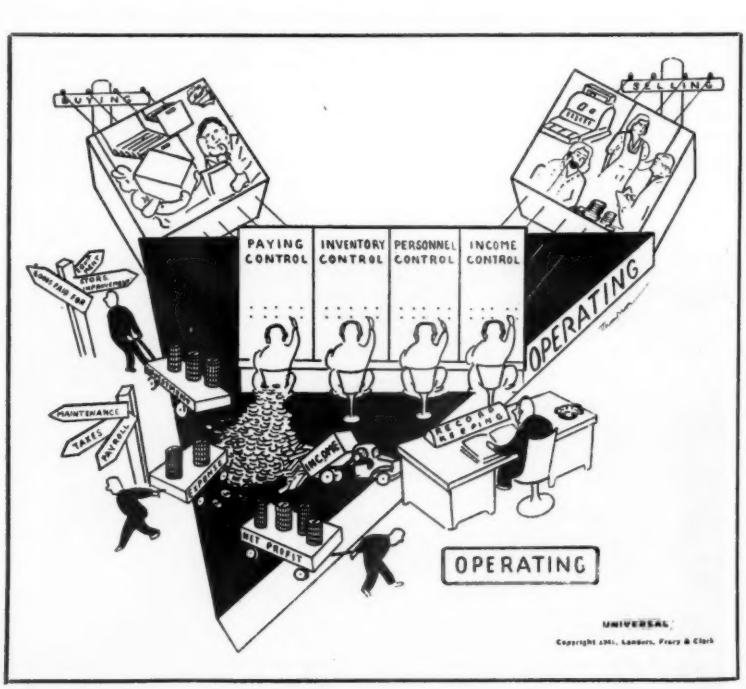
After you have planned the work to be done, delegate responsibility to your subordinates. Be sure each employee knows exactly what his duties are—then hold him responsible. Only in this way can you free yourself for your important managerial responsibilities.

Your records are your most important operating guides. They should be designed and maintained to give you the facts you need when you need them.

The minimum essential records you need for a good control job are those which will enable you to:

(1) Pay your bills promptly. Your credit standing and your ability to buy in the market depend upon prompt payment of suppliers' bills. Furthermore, you must pay promptly in order to take your cash discounts. Remember — a 2 per cent cash discount for payment within 10 days is equal to 36 per cent annual interest on your money. You can't afford to miss this big saving!

(2) Collect from your customers promptly. If you grant credit to your customers, your records must enable you to render accurate statements and to collect promptly. Bad debt loss is often the result of improper ac-



Operation is the controlling factor in successful retailing. It includes the analyzing and acting upon vital information recorded from buying and selling procedures; and the controlling of the receipt of gross income and its disbursement with resultant net profit.

This article is adapted from information prepared by business executives of the Burroughs Adding Machine Co., Moore Business Forms, Inc., and Shaw-Walker Company, in cooperation with Dr. O. P. Robinson, of New York University's School of Retailing, for the Landers, Frary & Clark organization.

counts receivable records and slow collection procedures.

(3) Measure the individual production of your employees. Even if your store is small, you will need to maintain accurate employee production records. You must know which of your employees are failing, which are succeeding and why. Records will enable you to take the guess out of this important control job.

(4) Control your expenses. A profitable store operation is built on sound expense control. The right records will help you to know where you stand at all times.

(5) Prepare accurate balance sheets and profit and loss statements. For planning and budgeting purposes, for your creditors and your banker, for tax purposes, and to show you where you stand, what you have—what you owe—who owes you, you must maintain records which will enable you to prepare accurate statements quickly.

How To Control Your Business

You read a daily newspaper to find out what is going on in the world. Isn't it equally important to read daily what is going on in your business? The few minutes spent each morning in studying the changes that have taken place in your business within the past twenty-four hours are the most precious minutes of your day—because they enable you to take your bearings and chart your business course as effectively as a ship's captain charts his course after taking his bearings with a sextant.

At the time merchandise is received and recorded, a copy of the Receiving Record is sent to the accounting department. The purchase at cost, is recorded on the Purchase Journal and the selling department is charged. The vendor's list is referred to for determining the correctness of the house number and discount terms appearing on the invoice. Entries of term, discount, net amount, and due date are made on the apron. Invoice is then ready for payment. Following are the forms involved:

Invoice Apron: Pasted to the vendor's invoice. This apron shows the complete history of the transaction from the time a shipment is received until the invoice has been paid. Filed by vendor in accounts payable department.

Vendor's Receipts: Given to the truckman as receipt for the delivery of merchandise.

Department Copy: Used for posting to the Purchase Journal of the correct department. Then forwarded as notice to each department manager that merchandise has been received. Filed in selling department.

Package Label: Pasted to the package in the receiving platform. The number on the package is compared with that on the Invoice Apron by the checker in the marking room. In the event that more than one package is received the original number is crayoned on the other packages showing Receiving Number, On Lot, the Date, and Department.

Receiving Department Record: Filed numerically by serial number.

The voucher and check are perforated for separation, on the original copy so that your supplier will have

(Continued on page 86)

More Pointers on Store Planning

IDENTIFY your store as an electrical appliance store if you want to build sales and be able to meet competition in good times or bad.

That is the advice now being given to appliance retailers by General Electric Company in a new book entitled "Your G-E Appliance Store."

Citing the results of a survey made specially for the Company by Walter Dorwin Teague, famous designer and industrial consultant, the book points out that "retail stores, in their very effort to attract attention, have defeated their own purpose. A disordered, frenzied clamor for attention, in which nothing can be heard for the shouting, should give way to a unified, clean, distinctive impression."

On the basis of this finding, the new G-E publication offers concrete suggestions for the unified design of the five basic types of appliance stores. Some of the specific points that are made concerning store fronts are these:

Strive for clean lines that are direct, attention getting, inviting.

Display the name of your store on a panel mounted flat against the store front over the windows and doors. Distant traffic can be attracted by a smaller, projecting, double-faced sign.

Tell the public that you sell appliances by including the word "appliances" on your sign.

Keep bulkheads low.

Keep glass area free. Decalcomanias outlining in greater detail the appliances the store carries should be mounted on the door or window just below eye level.

Pointing out how even the finest painting can be spoiled by a bad frame and improved by a good one, the book asserts that "appliances, too, make far better impressions if they are presented in attractive surroundings—given the proper stage-dressing and harmoniously arranged."

In order to help retailers build "the frame that sells the picture," the book also presents detailed suggestions for laying out the five basic types of stores.

Carrying out its precept to avoid disorder and strive for a store that is noticeable, appealing, clean and unified, G. E. makes these further basic recommendations.

Arrange appliances within the store so that pedestrians can see as many as possible through the windows.

Allow plenty of room for the customer to move round on the sales floor. Avoid crowded aisles.

Provide an adequate service department plus a working demonstration kitchen and laundry.

Group appliances so that shoppers for one item are exposed to many related items.

Make sure that the background for the appliances is as modern as the appliances themselves.

In announcing the new book, A. L. Scaife, advertising and sales promotion manager of General Electric's Appliance and Merchandise Department, asserted that it is probably the most comprehensive yet published by a manufacture in an effort to help electrical appliance retailers to set up modern, sales building stores or departments.

"Any retailer who would like to see a copy of this book is free to call upon his nearest G-E major appliance distributor," he said.

Included in the book, in addition to the section on store fronts and arrangements, are chapters telling where to locate a new appliance store; how much space to allow for the appliance display stocks; what sort of demonstration rooms should be established; how to use light to boost sales; how to identify the retailer's trucks, and so on.

Another important section of the book is devoted to display merchandisers for all types of traffic appliances and radios. Using the blueprints that are available from General Electric, any woodworking shop or carpenter can build the 12 basic pieces which form almost any type of display.

Wave Windings for A-C Motors

Chapter 5—Continuing the step-by-step construction of conventional diagram.

By A. C. Roe*

This is a continuation of the series of articles, which started in the June 1945 issue of Electrical South, covering a complete study of a-c wave windings. This series will include a complete set of connecting diagrams developed on a new, simplified basis which eliminates the use of the large detailed drawings heretofore associated with wave windings. New subscribers can obtain copies of the first articles by writing to the editor of this publication.

IN THIS article instructions are continued for constructing the standard type of wave winding diagram, by filling in the two B-phase and C-phase sections of the winding.

In a-c wave windings, as in the developed lap winding diagrams, the "two-in-and-one-out" check must be used. In this series, the arrows representing instantaneous directions of current flow will point in on the A1 and C1 leads, and will point out on the B1 lead. This will result in the arrows pointing in on the A1, B2, C1, R2, R3, and R6 leads, and out on the A2, B1, C2, R1, R4, and R5 leads.

120-Degree Lead Spacing

On the rotors using a-c wave windings, it is customary to select slots 120 mechanical degrees apart for the A1, B1, and C1 leads, or as close to the spacing as possible.

In this series, the 120-degree lead spacing will be used, but data will be provided also for other lead arrangements.

*Mr. Roe is a motor engineer associated with Westinghouse Electric Corp., East Pittsburgh, Pa.

There are some slots and pole combinations where the true 120-degree spacing of the leads cannot be worked out. In these cases, some adjustment must be made, and some space will be devoted, therefore, to the problem of locating the B1 lead slot.

In Fig. 14, the slots number 1, 7, 10, are marked, where the A1, A2, R1, and R2 leads of the A-phase winding were brought out. To start the B phase, a slot must be found with an "out pointing" arrow; a slot one-third of the distance around the rotor from slot number 1. In this case, since there are 12 slots, one third of the distance around the rotor would be 12/3+1 indicating slot 5. Checking Fig. 14 it is found that the bottom half of slot 5 has an out pointing arrow and thus is suitable for starting the B-phase winding with 120 degrees lead spacing from lead A1.

Filling in the B-Phase

In Fig. 14, draw the bottom lead from slot 5 to form the starting or B1 lead. The **b1** coil is formed by joining slots 5 and 8 across the rear. The **b1** coil is connected to the **b2** coil by joining slots 8 and 11 across the front. Then coil **b2** is formed by joining slots 11 and 2 across the rear, and the R3 lead is brought out from the top of slot 2, adjacent to the B1 lead.

Note that in following through coils **b1** and **b2** from the B1 lead, we progress against the pointing arrows, or we can follow the arrows back from R3 through coils **b2** to **b1** and out on the B1 lead. The R3 lead is one

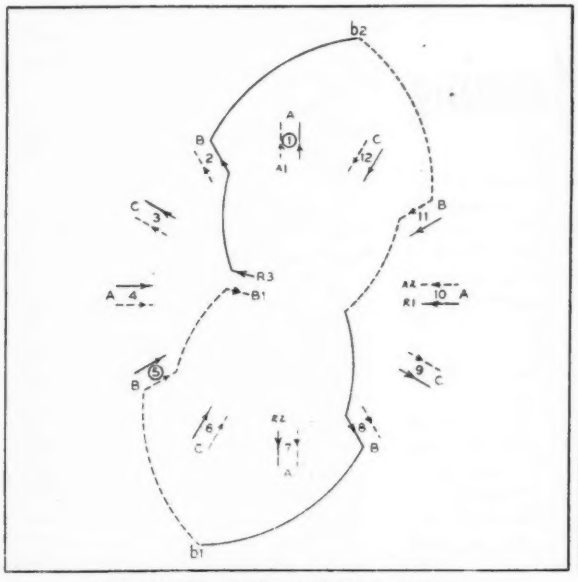


Fig. 14. First half of B-phase winding.

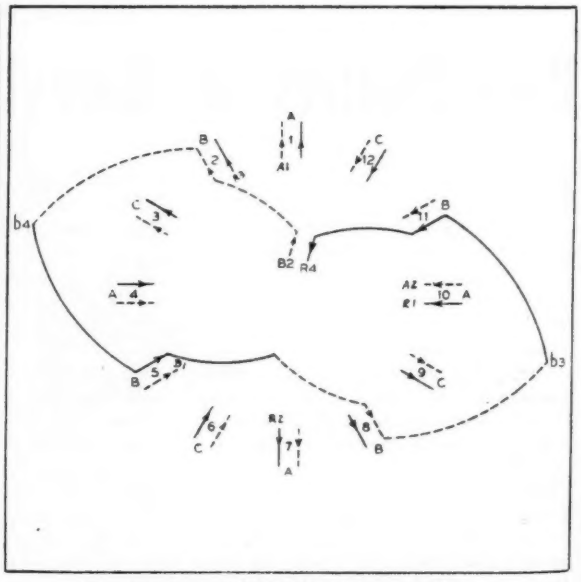


Fig. 15. Second half of B-phase winding.

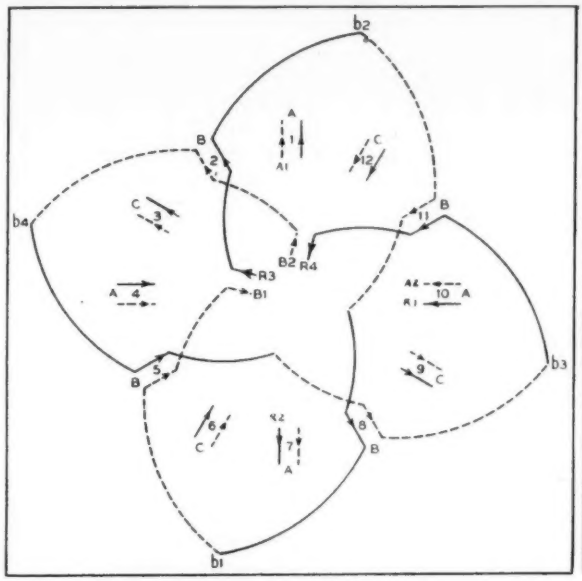


Fig. 16. The complete B-phase winding.

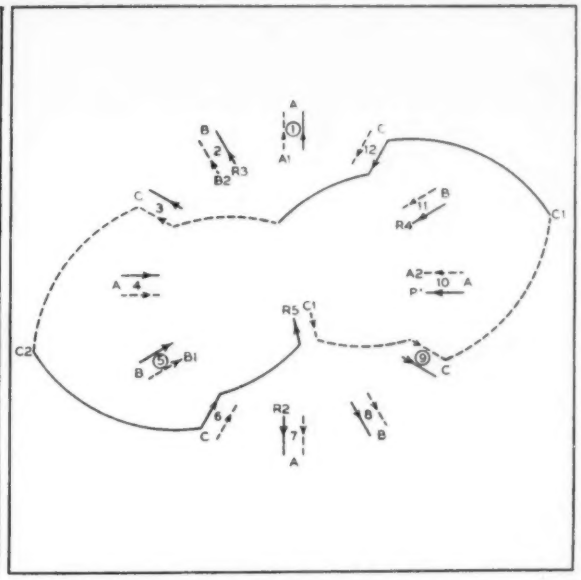


Fig. 17. First half of C-phase winding.

back pitch in a minus direction from the B1 lead in slot 5.

When locating the B1 lead, the slot must be checked for four items. (1) The direction arrow must point out, so that entering on the B1 lead we will follow through the series of B coils *against* the arrows *in all slots* and *all leads*. (2) The slot must be the first in the B phase pole group. (3) For 120-degree lead spacing, the B1 lead slot must be one-third the number of slots from the A1 lead. This slot can be picked up either in the same rotational direction as the slot and phase numbering or in an *opposite direction*. (4) If the one-third slot spacing will not provide the proper conditions, select a slot or group of slots as close to the 120-degree spacing as practical.

The second section, or R4 to B2 group of the B phase is started by using the same rule used for the A phase. That is, the R4 lead should be in a slot one minus back pitch from the R3 leads. In Fig. 14, the R3 lead is in the top of slot 2 or 14. Then 14 minus 3 equals 11. Fig. 15 shows the R4 lead started in the top of slot 11, which is a B phase slot and has the arrow pointing in.

The **b3** coil is picked up in a clockwise direction by joining slots 11 and 8 one back pitch across the rear. Using solid lines for top and dotted lines for bottom coil halves to join coil **b3** to **b4**, a front pitch of 3 is used to join slots 8 and 5 as shown in Fig. 15. The **b4** coil is formed by joining slots 5 and 2 with a back pitch of 3 across the rear. The B2 lead is brought out from the bottom of slot 2 adjacent to lead R4. Note that from the R4 to the B2 lead, all slots and coils were followed through against the arrows, and that all slots were in the B phase pole groups.

Comparing Figs. 14 and 15, it is found that where the B1 to R3 series of coils used a top coil half, that the R4 to B2 series of coils used a bottom coil half in the same slot. Or where one group used the bottom, the other group of coils used the top. Thus the two sections of each phase use up the same slots.

The B phase is shown drawn in complete in Fig. 16, where again it is to be noted that there is the close grouping of the B1, R3, B2, R4 leads in slots 5, 2, and 11. With the B1 and B2 leads on bottom coil leads in slots 5 and 2, and the R3 and R4 leads on top coil leads from slots 2 and 11, note the back pitch relation of 3 slots, or 1 and 4, between the B1 and R3 leads, R3 and R4 leads, and B1 and B2 leads. As the winding diagram is developed, it will be found that the number of slots-per-pole-per-phase is a basic factor in the layout and locating of leads, coils, etc.

Starting the C-Phase

In Fig. 17, slots 1, 2, 5, 7, 10, 11 are each marked with the preceding A and B phase lead symbols, to assist in locating the C phase leads. To start the C1 lead of the first C phase section of **c1** and **c2** series of coils, locate a slot one-third the distance from the B1 lead, or two-thirds of the number of slots from the A1 lead slot. Thus 5+4=slot 9, as 1+8=slot 9.

Slot 9 must be checked to determine if the arrow points in, as the C1 lead requires this instantaneous direction. Fig. 17 shows that slot 9 meets this requirement. Next, slot 9 must be in the C phase group. Again, Fig. 17 shows that this is true.

Start the C1 lead on the bottom coil lead in slot 9. Then form coil **c1** by joining bottom of slot 9 with the top of slot 12, a back pitch of 3 across the rear. To join coil **c1** to **c2**, use a front pitch of 3 to join the top of slot 12 to the bottom of slot 3 across the front of the winding. Coil **c2** is formed by joining the bottom of slot 3 to the top of slot 6, a back pitch of 3 across the rear from the top lead. In slot 6, bring out the R5 lead over to, and adjacent to, the C1 lead.

In Fig. 17, the winding is started in on the C1 lead and followed through, with the arrows, coils **c1** and **c2**, coming out on the R5 lead.

The next step is to start the R6 to C2, second C-phase series of **c3** and **c4** coils. In Fig. 18, the C1 and R5 lead slots are marked. According to the rules, we should start the R6 lead on the top coil lead, with an in pointing arrow, in a slot one minus back pitch of 3 from the R5 slot number 6. In Fig. 18, slot 3 meets these requirements. Coil **c3** is then formed by joining the top of slot 3 in a clockwise direction to the bottom of slot 12, a back pitch of 3 across the rear. Coil **c3** is joined to coil **c4** by the front pitch of 3, from the bottom of slot 12 to the top of slot 9. Then the final coil of the winding and the C phase, is formed by a back pitch of 3 joining the top of slot 9 to the bottom of slot 6; and from the bottom of slot 6, the winding is ended by bringing out the

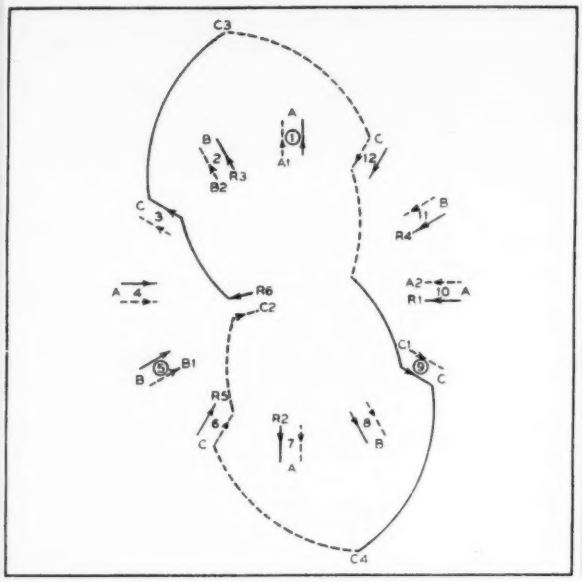


Fig. 18. Second half of C-phase winding.

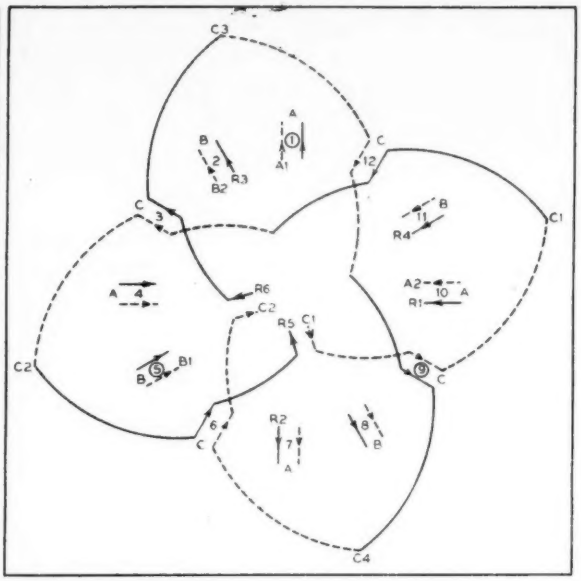


Fig. 19. The complete C-phase winding.

C2 lead on the bottom coil leads as shown in Fig. 18.

The complete C phase winding with the series of c1, c2, c3 and c4 coils is shown in Fig. 19 where the C1, R5, C2, R6 leads are grouped close together. The C-phase winding thus starts on the C1 lead and follows the arrow through coils c1 and c2, out on lead R5, then in on lead R6 through coils c3 and c4 in a reverse direction, but still in the same direction as the arrows, and ends on lead C2.

In Fig. 19, the R6 lead is a back pitch of 3 in a minus direction from the R5 lead, with the R5 and C2 leads both in slot 6. This feature of the A2 and R1, B2 and R3, C2 and R5 leads being in the same slot, only applies to windings, with ONE-slot-per-pole-per-phase. With one-slot-per-pole-per-phase, the same rule applies with any number of conductors per slot.

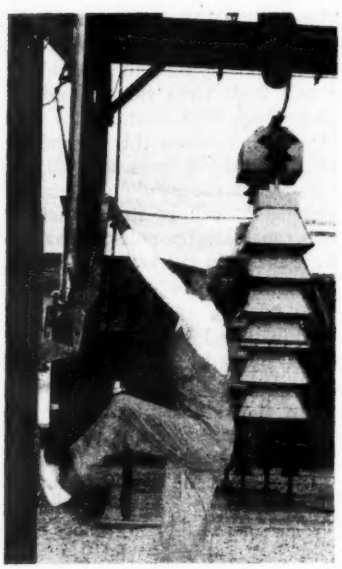
As the number of slots per-pole-per-phase increases, the slot spacing between the A2 and R1 leads increases in the same proportion. This applies in the case of the whole number of slots-per-pole-per-phase, such as 1, 2, 3, etc.

With Fig. 19, the 4-pole, 3-phase, one-slot-per-pole-per-phase, left-hand, leads on bottom, counterclockwise winding was completed, in sections of one phase at a time. This was done to make it easy to follow the methods of constructing the a-c wave winding standard diagrams and to demonstrate some of the basic rules.

The next step will be to show the same winding with all phases together in one diagram, and then to break down the developed diagram into the simple diagram that will be used throughout this series. The next article will take up this phase of the diagram construction.

Woman Line Patrolman Makes Good in Florida

A WOMAN patrolman! It is an easy matter to imagine the heavy sniffs of incredulity which went up in many quarters when the idea was first broached at Florida Power & Light Company. And, as you can further imagine, the idea of a woman patrolman did not originate from the male section: it was a woman who conceived the idea and sold it so successfully that she got the job . . . and still has it.



Mrs. Mabel Wood

A couple of years ago, the manpower pinch was making itself very evident around Florida Power & Light Company and already women had been employed, for the first time, in many positions. A vacancy was imminent as a patrolman, and the application lists for jobs failed to reveal anyone capable of filling the job.

Mrs. Mabel Wood, of Pompano, a small town midway between Miami and West Palm Beach, heard of the opening and promptly applied for the job. Company officials were somewhat skeptical about the ability of this tiny woman, the mother of several children, to handle the job, but a combination of her persuasiveness and the fact that no man could be found to take the position turned the tide. She got the job—and the company has never had cause to regret it.

She covers a 40-mile beat between the company's steam electric station near Ft. Lauderdale and the West Palm Beach Substation. She has five substations on her patrol beat and on these she cuts the grass, pulls the weeds, keeps the shrubbery trimmed, and, of course, does the switching, takes weekly meter readings, and maintains the storage batteries.

She patrols the lines of her 40 miles

(Continued on page 86)

A Statement of Kelvinator's Retail-Minded Program as Selling Starts Again

WITH production of Kelvinator refrigerators and electric ranges increasing daily, and the familiar sound of selling soon to be heard once more in retailers' showrooms—we again make a statement of the thinking, the policies and the program that will back these new products and mark the beginning of a greater business future for retailers holding the Kelvinator franchise . . . the most valuable franchise in the appliance industry.

It will soon be six years since Kelvinator electrified the industry by announcing its "Retail-minded" Dealer Program . . . with its "selective dealer" provisions . . . fewer but finer models . . . sharply lowered prices . . . backed up by policies in which the *retailers' interests took precedence over every other consideration.*

That program made history. It launched a sales advance which carried Kelvinator dealers to new positions of leadership. Average sales of Kelvinator retailers doubled . . . quadrupled . . . and by the end of 1941, had reached eight times the average dealer volume of 1939.

The same kind of retail-minded thinking which shaped Kelvinator's pre-war program is the sound basis of dynamic future plans.

Here are the policies that Kelvinator retailers can count on—policies conceived with their interests as retailers in mind—developed specifically to help them build a sounder business future.

RETAIL-MINDED DISTRIBUTION—A selective dealer organization of not the most but of the *finest* retailers . . . with an adequate market for every dealer, making possible *more sales per dealer.*

COMPETITIVE PRICES—Kelvinator's aim will always be to maintain a price policy that is vigorously competitive, prices that will mean *more sales per dealer.*

PRODUCT LEADERSHIP—Kelvinator will adhere to the manufacturing principle of "quality first." Add to this Kelvinator's determination to have its products contain brilliant features with strong consumer appeal and practical usefulness in the home. And the results can only mean *more sales per dealer.*

RETAIL-MINDED MERCHANDISING—Kelvinator advertising, sales promotion and sales training will always be designed with but one purpose—to move merchandise off the retailer's floor, to make *more sales per dealer.*

PRODUCT STRATEGY—Kelvinator will continue its policy of limiting the number of models to the type and size most needed and most in demand . . . thereby holding dealers' investments in inventories at a minimum. To give retailers more "top-of-the-line" sales, Kelvinator products will be designed to make the value of step-up features between models instantly visible to customers. Close adherence to these policies means *more profit per sale.*

These are retail-minded policies of Kelvinator. Behind them stand a group of men, both factory and field, who are *one* in the conviction that Kelvinator's success and future progress is dependent on the Kelvinator retailer's success. With all thinking and planning keyed to this conception, it is to be expected that Kelvinator will quickly sense trends affecting the retailers' interests . . . and that in the future, as in the past, Kelvinator will lead in products, policies and program, in which *more sales per dealer* is the one objective.

Vice President in Charge of Sales

Get the Best things First

Get **Kelvinator**

4 Great New

...Step up to CD-7

...Step up to C-7

...art with CS-7

New Kelvinator beauty, nous Kelvinator depend- le performance and extra lue, combined in a great new rigerator that includes all of lvinator's basic engineering and nstruction features. 7 cu. ft. ca- city . . . 12.2 sq. ft. of easy-to- ch shelf area . . . 9 lbs. of ice bes.

★Step up one model . . . add four great features the prospect can see and will want—large, sliding Kelvin Crisper . . . capacious, sliding Meat Chest . . . 1¼ bu. Vegetable Bin . . . 5-way magic shelf . . . plus every sales-making Kelvinator feature incorporated in the CS 7.

★ Step up one more model . . . and show your prospect five extra sales features loaded with consumer appeal . . . everything that's in the C-7, plus a second large, sliding Kelvin Crisper with crystal-clear glass cover . . . 13.1 sq. ft. of shelf space . . . and 13 lbs. of ice cubes.

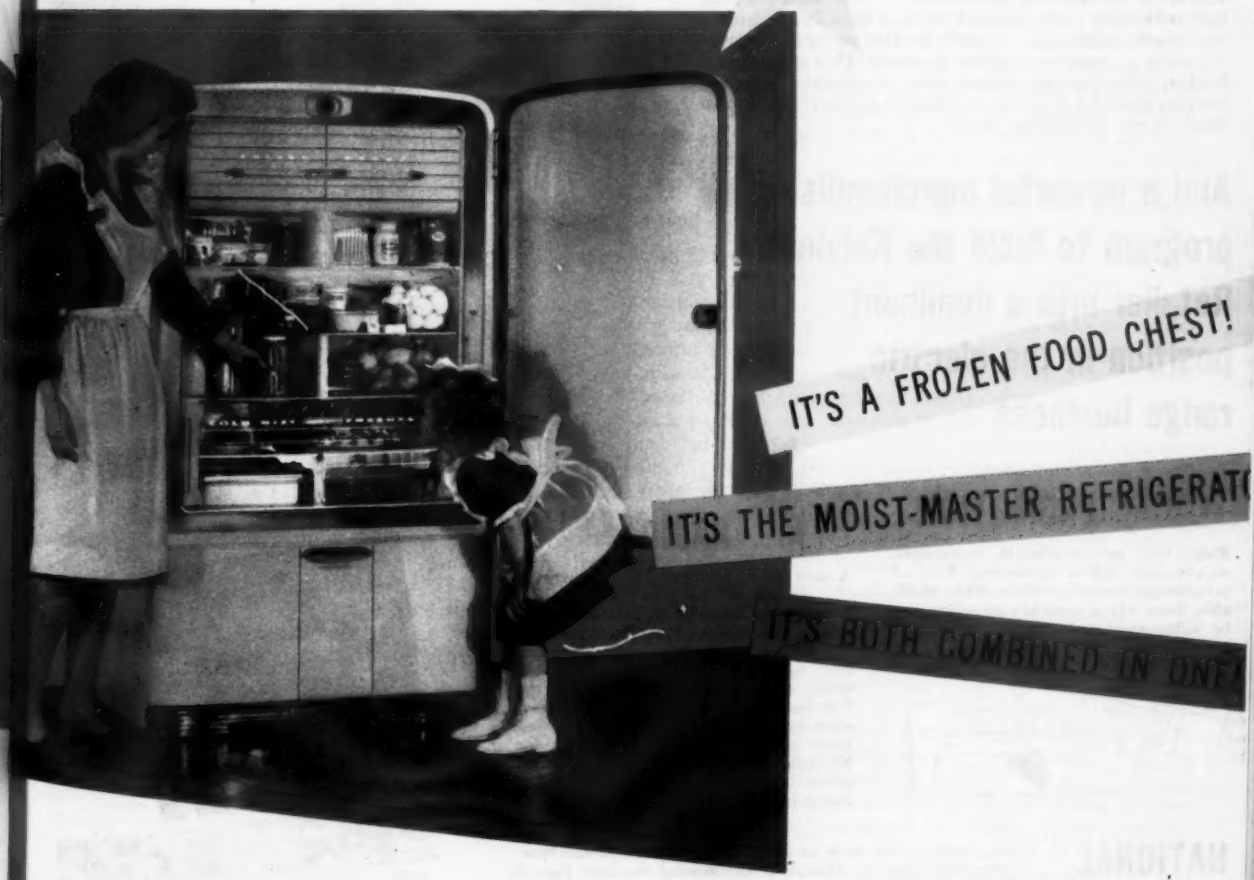
th these four great new Kelvinators, dealers can et the needs of every prospect in today's great re- erator market. In beauty ... in consumer appeal ... extra value . . . these four refrigerators set new ndards of leadership. Add to this Kelvinator's dependable Polarsphere sealed power unit, with its unmatched record of trouble-free performance, and long-range customer satisfaction is assured. This, in turn, assures the Kelvinator dealer's future in the appliance business. And that's why we say—

Get the Best things First

Kelvinators

GREATER in Beauty!
GREATER in Consumer Appeal!
GREATER in Dependable Performance!
GREATER in Extra Value!

then Step up to the Kelvinator MM-9



★ It's a Frozen Food Chest . . . it's a Moist-Master refrigerator . . . it's both combined in one beautiful cabinet. Total capacity 9 cu. ft. . . . with the zones of cold ideal for every kind of food—freezing cold . . . dry cold . . . moderately-moist cold . . . super-moist cold. Room for 36 twelve ounce packages of frozen food plus 13 lbs. of ice cubes.

Get Kelvinator

Plus 3 Great Electric Ranges

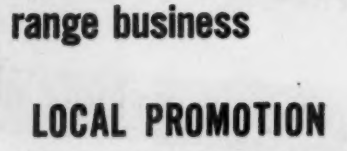
THE KELVINATOR "AUTOMATIC COOK"

. . . the top model of the Kelvinator electric range line. It features . . . the Kelvinator "Automatic Cook" control, the "brains" of the range that starts, times and stops all cooking operations . . . the Scotch Kettle that will cook a whole meal for less than 2¢ . . . multiple speed switches . . . 2-unit broiler oven . . . warming oven . . . and two utility drawers. This sensational leader, plus the two other great Kelvinator electric ranges, give the Kelvinator retailer a complete line to meet every prospect's needs.

And a powerful merchandising program to build the Kelvinator Retailer into a dominant position in the electric range business

LOCAL PROMOTION

Radio spot announcements, newspaper advertising, and a continuous flow of promotional material will be made available, from which specific campaigns can be tailor-made to fit the Kelvinator retailer's local market.



RADIO

A new time, 10:30 P. M. Wednesdays . . . on one of the great national networks, the Columbia Broadcasting System . . . increases the effectiveness of Kelvinator's high-rating radio program. For some months now, hard-hitting radio commercials have featured the Kelvinator electric ranges and refrigerators on every program. They will continue to build public acceptance for Kelvinator electric ranges and help make the Kelvinator retailer a dominant factor in the electric range business.

NATIONAL MAGAZINES

The October 8th issue of Life Magazine carries this four-color, full-page advertisement announcing the new line of Kelvinator electric ranges to its millions of readers. This is the first of a series that will dramatically sell the superior features of Kelvinator electric ranges to Kelvinator retailers' prospects throughout America.

Get the Best things First

Get Kelvinator

Maintaining Industrial Electrical Equipment

Part 9—Electronic Equipment*

SPECIAL safety precautions must be observed before and during the application of preventive maintenance procedures. Electronic equipment employs high voltages which are dangerous to human life. Extreme care must be taken to assure that all power is removed from the apparatus before servicing. Discharge capacitors before touching them with the bare hand. Every effort must be made to avoid injury to personnel and equipment during preventive maintenance work. Familiarity with equipment is likely to breed carelessness. Pay strict attention to every safety measure. Death by electrocution awaits the operator or maintenance man who takes chances with high-voltage circuits. Careful operators or maintenance men make certain that every safety precaution is taken.

Parts such as tube envelopes and resistor bodies remain very hot for several minutes after power has been removed from the unit. Some units have a temperature so high that very painful burns will result if the bare skin touches them. A bad burn may cause involuntary movement of the arm or body which can damage the equipment, especially the tubes. If work is started immediately after the power has been removed from the apparatus, extreme care is necessary.

Careful handling of the equipment should become a regular habit. Space for working on parts, partially covered by other parts, should not be made by pushing, tugging and moving the parts out of the way. Always avoid unnecessary strain on wires, cables, connections and couplings.

Basic Maintenance Operations

Tools used inside the apparatus frame must be firmly grasped and special care must be taken to prevent the dropping of pliers, screwdrivers, and similar repair tools on breakable parts. A heavy tool dropped on a tube may break the glass envelope or shift the position of the internal element.

The actual work performed during the application of preventive maintenance is divided into six types of operations. These are: cleaning, inspection, feeling, tightening, adjusting, and lubricating.

Keeping the apparatus clean will alleviate high-voltage flashovers and the resulting damage to parts. Cleaning the apparatus, both inside and out, is essential for good operation. Periodic cleaning is more frequent on exposed parts than on those which are contained within the cabinet. Inspection may reveal that some parts require more frequent cleaning than others. If so, these items should be attended to on a regular schedule before trouble is encountered.

Inspection Important Factor

Inspection is probably the most important operation in the preventive maintenance program. Careful observation is required. A careless observer will overlook the obscure evidence of defects and abnormalities. Slight abnormalities may not interfere with the equipment performance, but these are deviations from normal that should be discovered early. Valuable time and effort can be saved if defects are corrected before they lead to major breakdowns. Operating personnel must make every effort to become familiar with the indications of normal functioning. In this way, signs of malfunctioning will be recognized more readily.

Inspection consists in carefully observing all parts of the equipment, noticing their color, placement, state of cleanliness, etc. Inspect for the following conditions:

Overheating, as indicated by discoloration, blistering or bulging of the parts or surface of the container; leakage of insulating compounds; and oxidation of metal contact surfaces.

Placement, by observing that all leads and cables are in their original positions.

Cleanliness, by carefully examining all recesses in the unit for accumulation of dust, especially between connecting terminals. Parts, connections and joints should be free of dust and corrosion, and other foreign matter. In high humidity locations, look for fungus growth and mildew.

Tightness, by testing any connection or mounting which appears to be loose. This may be done by slightly pulling on the wire or feeling the lug or terminal screw.

The feeling operation is used more often to check rotating machinery, such as blower motors, generators, etc., and to determine if electrical connections, resistors, bushings, etc., are overheated. Feeling indicates the need for lubrication or the existence of excessive friction in rotating equipment and bearings. Normal operating temperatures of motors will permit the hand to be held in contact with the motor or bearing case for a period of approximately 5 seconds without discomfort. Feeling on capacitors, wiring, etc., may indicate an overloaded condition which should be corrected.

It is important that the feel operation be performed as soon as possible after power has been removed from the equipment and the circuit grounded, and always before any other maintenance is done.

Vibration from moving machinery may result in loose connections which are likely to impair the operation of the apparatus. All loose parts (especially if they are large) are definite hazards to associated equipment. If loose parts shift, or fall out of place, near-by parts may be crushed.

The importance of firm mounting and connections cannot be overemphasized. Screws, bolts and nuts should not be tightened indiscriminately but only when they are definitely known to be loose. Fittings tightened beyond the pressure for which they are designed may become damaged or broken. When tightening, always be certain to use the correct tools of the proper size.

Adjustment should only be made when inspection indicates that it is required in order to maintain normal operating conditions. The required adjustments vary with each type of equipment. Specific information on adjustments will be contained in the instruction book supplied with the apparatus.

Lubrication refers primarily to the

*This article is adapted from information prepared by engineers of the Westinghouse Electric Corp.

application of grease or oil to the bearings of motors or other rotating shafts. It may also mean the application of a light oil to door hinges or other sliding surfaces found around the equipment. Certain parts of electronic apparatus are prelubricated at the factory and should require no further lubrication. Information on these parts will be found in the instruction book supplied with the apparatus.

Maintenance Techniques

Most of the parts used in electronic apparatus require routine preventive maintenance. Those parts requiring maintenance differ in the amount and kind of maintenance required. Because maintenance techniques cannot be applied indiscriminately – definite and specific instructions are needed. This chapter contains this type of specific instruction and serves as a guide for personnel assigned to perform the maintenance operation. It does not deal with each tube, each resistor, and each capacitor contained in a specific piece of apparatus, but instead combines all instructional material on major classes of parts and devices.

CAUTION: Before performing any preventive maintenance work on electronic apparatus, make certain that all power has been removed from the equipment and that capacitors have been discharged and circuits grounded before touching them.

Convenient means of making certain that a circuit is grounded is by the use of a grounding stick, which is not normally supplied with the apparatus. However, one may be made from materials which are usually found in any maintenance department. Use a piece of dry wood, or some other material that is a good electrical insulator. It should be about 12″ long and ¾″ in diameter. To one end of the stick securely fasten a piece of copper, or brass, about 8″ long and at least 1/16″ cross section in such a manner as to form a "T". Solder a piece of heavy flexible hook-up wire to the metal rod where it fastens to the stick. Attach a heavy clip to the free end of the hook-up wire. When using the grounding stick, fasten this clip to the cabinet frame, making certain that there is a good electrical contact. Then, place the rod against the capacitor terminals to short circuit and ground them prior to touching. In a similar manner discharge all circuits prior to touching them with the bare hand.

Vacuum Tubes

Preventive maintenance work on vacuum tubes includes inspection and cleaning. Work on the tube sockets and mountings involves inspection, tightening, cleaning and adjusting. Each of these operations is discussed in detail. Avoid doing work on tubes immediately after shutdown as severe burns may result from contact with envelopes and hot tubes.

Inspect both glass and metal tube envelopes for accumulation of dirt, and tube connector clips for dirt and corrosion. Watch for tube caps which have been broken away from the cement that attaches them to the glass envelope; also, for tube envelopes that have been broken away from the tube base. When tubes with loose tube caps or envelopes are found, they should be replaced, if possible. If suitable replacements are not available, repair should not be attempted; but a record should be made so that replacement will be made at the earliest opportunity.

The spring clips that make contacts with the tube caps must be examined for corrosion and for loss of tension with resulting looseness. Also, the condition of the wire soldered to these spring clips must be checked. The wire should be free of frayed insulation or broken strands. The removal of connecting clips from loose grid or plate caps must be done with great care, particularly if signs of corrosion exist. Never turn a clip if it is on a loose cap.

The firmness of tubes in their sockets shall be determined by inspection. Make the inspection by pressing the tubes down in the socket and testing them in that position—not by partly withdrawing the tubes and jiggling them from side to side. Movement of a tube tends to weaken the pins in the base and unnecessarily spreads the contacts in the socket and trouble will occur where it did not exist before. It is desirable to inspect the socket of the tubes at the time the tubes are removed.

When it is necessary to remove a tube from its socket, especially if it is a high powered tube, great care is needed. A warm tube must never be jarred and connections to the grid and plate caps must always be removed. It is important to store tubes carefully after they have been removed from the socket. They should not be placed on elevated flat surfaces without proper precaution to prevent their rolling to the floor or ground. A hot tube should never come in contact with a cold surface, as breakage of the tube envelope may result.

Tighten all loose connections in the tube sockets or on the tubes. If the connections are dirty or corroded, they should be cleaned before they are tightened. When tightening lock nuts that hold the socket to the insulated bushing, do not apply excessive pressure. Too much pressure will crack the bushing. Socket mountings must be tight at all times.

Clean the tubes only if inspection shows cleaning to be necessary. Tubes operated at high voltages and with exposed plate and grid connections must be kept free of dirt and dust because of possible leakage between grid and plate terminals. In contrast, tubes operating at low voltages, not having exposed grid and plate caps, do not require frequent cleaning. Dirt should not be permitted to accumulate on low-voltage tubes, but the presence of dirt on them is far less important than it is on high-voltage tubes.

Tubes need not be removed from their sockets for cleaning. Instead, they should remain in place. This calls for special care during work on high power tubes with exposed grid and plate caps. The danger of breakage is great.

The cleaning of tubes calls for removing of dust and dirt from the glass or metal envelope. A clean, lint-free cloth moistened with cleaning fluid should be used. As soon as the surface has dried completely, the tube should be polished with a clean cloth. If proper care is exercised, the grid and plate caps may be cleaned with a piece of No. 0000 sandpaper. The paper should be wrapped around the cap and gently run along the surface. Excessive pressure is not needed; neither is it necessary to grip the cap tightly. When tube sockets are cleaned and the contacts are accessible, fine sandpaper may be used to remove corrosion, oxidation and dirt.

Adjust loose tube connections. Adjustment of contact springs must not be made unless inspection indicates clearly that they are necessary. Tube connector clips must not be flattened during adjustment as flattened clips will not make adequate contact with the surface of the tube cap. If the cap is made of a thin metal, it can be adjusted by gently pressing it with the fingers. If it is made of heavy gauge metal, suitable pressure can be applied with a pair of long nose pliers.

Welding—On the Hoof

An Ohio blacksmith, abandoning the forge and anvil method, builds up worn shoes by electric arc welding without removing them from the horse's hoofs.

Muscles in Reserve

An electric motor can step up its power output from three to five times capacity to handle peak loads of short duration.

WHY?

DO HUBBARD STRAIGHT GROOVE GUY CLAMPS HOLD BEST?

1. **Because:** The **straight groove** eliminates the possibility of drawing a nut tight against an "arched" section which is out of contact with the strand.

Clamping area reduced by warped section. Causes slippage at low strains.

Hubbard Clamps have full clamping area. Hold to breaking strength of most strands.

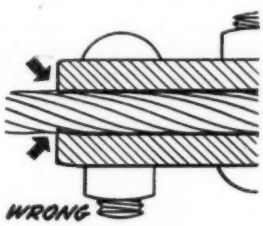
2. **Because:** The **straight groove** fits any and all twists, right or left hand and a variation in diameter without **creating** any high spots to **lessen clamping area.**

High spots in clamp reduce clamping area, cause slippage and injure strands.

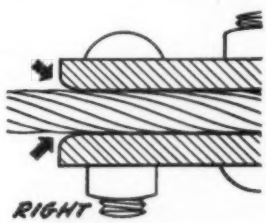
Hubbard Clamps fit snugly over any and all twists right or left and variations of diameter.

3. **Because:** Bell-end grooves prevent injury to the strand.

4. **Because:** High carbon bolts prevent stripping or elongation. Heads are locked against turning while tightening—and the whole clamp is protected against corrosion by the best process commercially used — HUBBARD DOUBLE-DIP HOT GALVANIZING.



Sharp edge from sheared section injures and weakens the guy at end of clamp.



Rounded ends of Hubbard Clamp sections protect strand.

HUBBARD and COMPANY

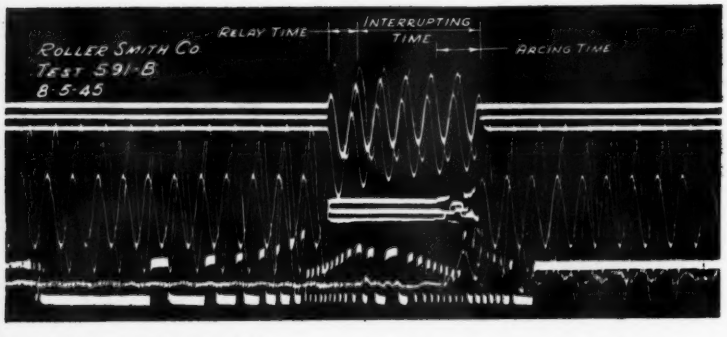
Pittsburgh Oakland, Calif. Chicago

ROLLER SMITH

"ON THE LINE" TEST STATION PROVIDES KEY TO SECRETS OF ARC EXTINCTION

THE new Exotherm principle of arc extinction discovered by Roller-Smith engineers puts arcs out faster because it harnesses the properties and energy of the gases produced when the arc is struck.

The discovery of the Exotherm principle grew out of the efforts of Roller-Smith engineers to reconcile conventional laboratory tests of breakers with performance "On the Line." The only answer seemed to be "On the Line Testing" of breakers. Through cooperation of the utility industry the first "On the Line" test station of its kind was established by Roller-Smith to seek out the real facts about oil circuit breaker performance. Because the tests were conducted under actual operating conditions, the full value of recovery voltage, both normal and transient, came into play. For the first time conflicting theories and claims about arc extinction could be tested under actual service conditions. After hundreds of tests "On the Line," provided information never before available, the Exotherm principle of arc extinction was discovered. A chamber in which the arcing takes place confines the gas, compresses it, and correlates the thermal and pressure characteristics to obtain rapid arc extinction.



Typical test oscillogram of Roller-Smith oil circuit breaker employing Exotherm principle. Note 5 cycle interrupting time.

Roller-Smith oil circuit breakers with the Exotherm principle give consistent 5 cycle operation; little or no burning of contacts and low pressures inside the tank. 5 cycle operation means better protection to equipment with resulting savings. Making use of the arc energy results in less contact burning and less oil sludging, saves inspection and maintenance. Low tank pressure results from the Exotherm principle because the gas is cooled and contracted before it gets into the tank. The result —far greater safety for indoor operation than ever before.

For full information on the Exotherm principle applied to Roller-Smith oil circuit breakers, write to dept. ES.

ROLLER SMITH

Oil Circuit Breakers

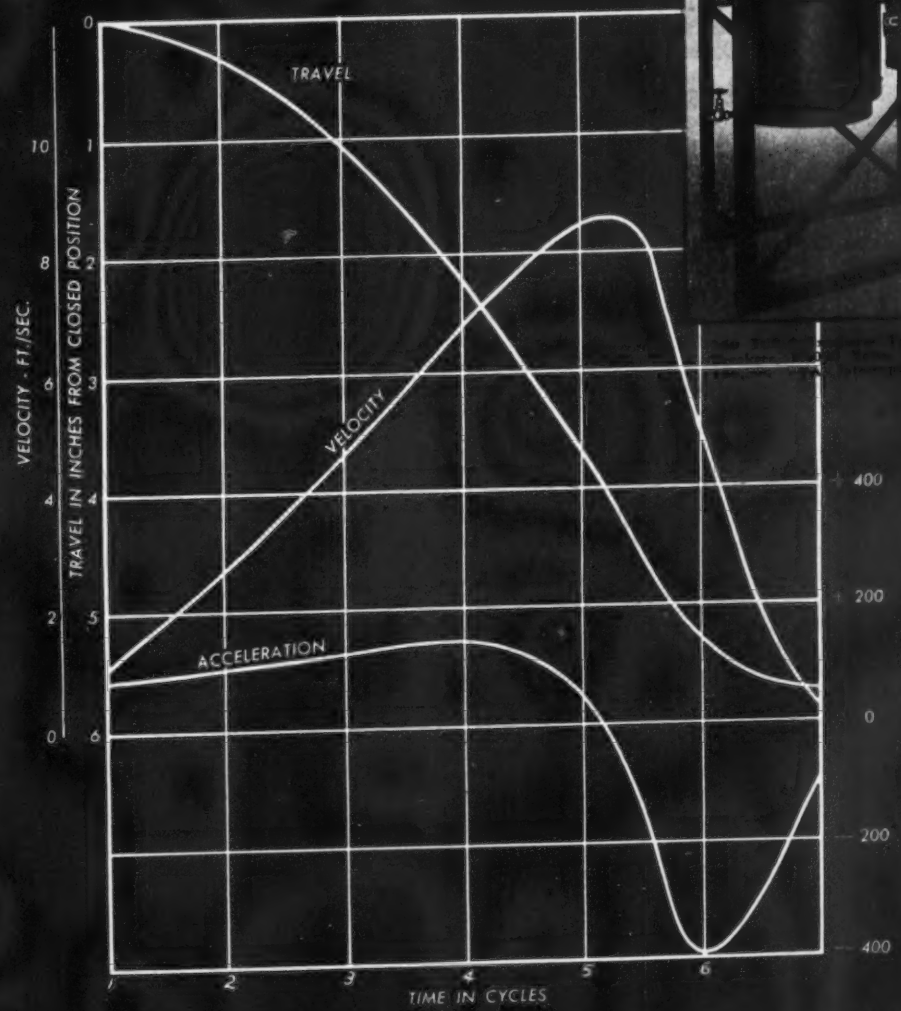
BETHLEHEM • PENNSYLVANIA

In Canada: Roller-Smith Marsland, Ltd., Kitchener, Ontario

STANDARD AND PRECISION ELECTRICAL INSTRUMENTS • AIRCRAFT INSTRUMENTS • SWITCHGEAR
AIR AND OIL CIRCUIT BREAKERS • ROTARY SWITCHES • RELAYS • PRECISION BALANCES

Announces

The New EXOTHERM principle of Arc Extinction...



NEWS of the INDUSTRY
National and Southern

Reports Show Expected Increase in Production

Reports to the Committee for Economic Development indicate that American manufacturers plan to produce 41.6 per cent more goods in 1947 than the output of 1939. These figures, released today by C.E.D., indicate 1947 manufactures in this country will be worth $80,518,000,000 compared with actual production of $56,843,000,000 in 1939, both figures being at the 1939 price level.

T. G. MacGowan, manager of market research for the Firestone Tire & Rubber Co., of Akron, as chairman of the C.E.D. Marketing Committee, supervised the study, being assisted by more than 50 of the nation's leading marketing specialists. Estimates were obtained from 1406 individual manufacturers and from 158 trade associations with more than 20,000 members. The report required more than 18 months of intensive study.

In discussing the results of the survey among electrical machinery manufacturers, the report points out that many of the companies in this group have little or no problem of reconversion for they have largely been making the same products during the war as before. Other companies have been making large quantities of war goods and face a serious problem of reconversion. Even so, the industry says it has no substantial reconversion problem and that reconversion can be completed in 3 to 4 months. In some segments the layoff of workers will run from one-third to one-half of present employment, and some of this will be permanent.

Some new products and many improvements are expected. Electronics and television promise to be productive fields, but what volume will be added in some of the industries in this group is unknown now.

There is generally little surplus of Government-owned goods and their disposal will have no effect on this industry. In some parts of the field, however, such as the radio segment, it is felt that unless an orderly disposition is made of surpluses, the results will be serious. The industry thinks that the plants and equipment owned by the Government should be sold or leased to private industry.

One company suggests that the basis of sale be the urgency of the need by the industry and the necessity for the products to be manufactured. Another recommends sale to buyers who could put plants into operation more quickly than others and use available manpower with a minimum of unemployment. Still another suggests the sale at reasonable prices of all plants which can be used for manufacturing and the use of others as warehouses for unusable machinery.

Cancellation of contracts may be disastrous unless accompanied by prompt settlement and approval to resume civilian production. No bad effect is anticipated if this is well handled. Continuance of war controls will be very restrictive, but some companies think controls will disappear as the need for them vanishes.

Imports are relatively unimportant in this industry, as is foreign trade as a whole, but in some parts exports are expected to increase.

Accumulated demand is sizable and very important and will be both stimulating and beneficial. It is thought that the demand will require about two or more years to be met. Accumulated savings are also an important factor because of the contribution to spending.

Per Cent Production Increase Expected in 1947 Over 1939

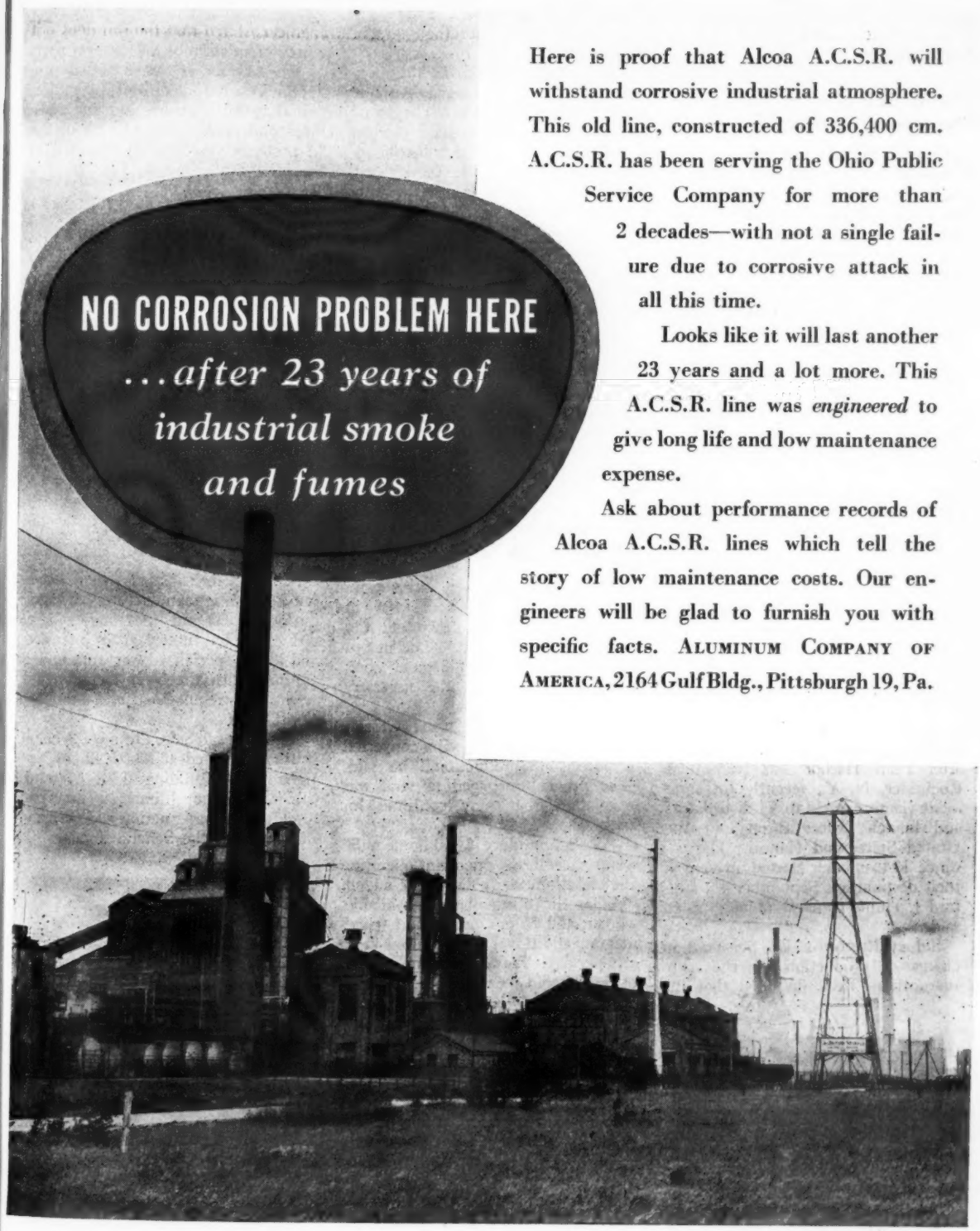
Wiring devices & supplies	45.8%
Carbon products for the electrical industry, and manufactures of carbon or artificial graphite	51.1
Electrical measuring instruments	34.7
Generating, distribution and industrial apparatus, and apparatus for incorporation in manufactured products, not elsewhere classified	67.3
Electrical appliances	67.7
Insulated wire & cable	39.5
Automotive electrical equipment	32.3
Electric lamps	45.3
Radios, radio tubes, and phonographs	81.2
Communication equipment	44.1
Batteries, storage and primary (dry and wet)	28.8
X-ray and therapeutic apparatus and electronic tubes	49.2
Electrical products not elsewhere classified	40.3
Electrical Machinery Industry Group	56.2%

WPB Says Industries Meeting Reconversion

Industries are meeting the challenge of reconversion, J. A. Krug, chairman of the War Production Board, said in his first report on "The Progress of Reconversion," which showed that by the end of this year the country's key industries expect production to be slightly over 100 per cent of the 1939-41 base period in terms of dollars, and employment to be slightly under 100 per cent of the same base period. Moreover, they expect both the production and employment figures to be climbing above these levels by the middle of 1946.

"Sixty-two major peacetime industries, representing 5,001 companies, were closely surveyed by the War Production Board," Mr. Krug said, "and the comprehensive preliminary data received from 42 of the most important of these industries, representing 3,750 manufacturers, gives us our first real indication of where we are heading in reconversion. These 42 industries covered in this report were primarily industries that had major reconversion problems. Additional industries will be included in future reports that will be made on industry's reconversion progress.

"This WPB survey on production and employment expectations for the next 10 months shows that the industries reporting are going ahead with ambitious production and expansion plans, that they are meeting no greater difficulties than were to be expected during this transition period,



Here is proof that Alcoa A.C.S.R. will withstand corrosive industrial atmosphere. This old line, constructed of 336,400 cm. A.C.S.R. has been serving the Ohio Public Service Company for more than 2 decades—with not a single failure due to corrosive attack in all this time.

Looks like it will last another 23 years and a lot more. This A.C.S.R. line was *engineered* to give long life and low maintenance expense.

Ask about performance records of Alcoa A.C.S.R. lines which tell the story of low maintenance costs. Our engineers will be glad to furnish you with specific facts. ALUMINUM COMPANY OF AMERICA, 2164 Gulf Bldg., Pittsburgh 19, Pa.

ALCOA A-C-S-R

ALUMINUM CABLE STEEL REINFORCED

and that they are already surmounting such difficulties with typical American ingenuity."

Radio Manufacturers Reconverting Quickly

General Electric will begin manufacture of home radios on October 1 and is preparing to start production of television and frequency modulation receivers soon after, I. J. Kaar, manager of the receiver division, has announced.

Scheduled for early distribution are a variety of portables, table models, consoles, radio phonograph combinations and farm sets.

All radios will incorporate new features which will give them an efficiency not achieved in prewar sets, Mr. Kaar said. The phonograph combinations, he added, will be equipped with the recently perfected electronic reproducer which almost entirely eliminates needle scratch and gives recorded music a new dimension in enjoyment.

Television sets, available some months after initial production of radio receivers, will range from the smaller direct view receivers to large-screen sets.

* * *

The first civilian home radio receiver to come off the bustling production line at the Stromberg-Carlson Company's plant since shortly after Pearl Harbor was packed at Rochester, N. Y., recently for shipment via air express to 55 distributors and branch offices throughout the United States and Hawaii. The advance 1946 models started arriving at their destinations September 15, Clifford J. Hunt, manager of radio sales, said.

Sidney R. Curtis, vice-president in charge of production for the communications firm, disclosed that the production schedule now under way was three times greater than any in the company's 51-year history.

The first model to make the long-waited-for trip down the assembly line was a plastic table model. The signal has been given for large-scale production of table and console radio-phonograph combinations, Mr. Curtis said. The first models shipped were equipped to receive AM broadcasts only. The company's new and greater FM receivers will be a little longer in coming, Mr. Curtis declared, estimating that they would be in quantity production "before the first of the year."

* * *

A production of 1,400,000 home radio receivers and 450,000 electric refrigerators in the first full year of post-war operation has been set for the manufacturing division of the Crosley Corporation, Frank A. Schotters, vice-president of Crosley in charge of production, told Crosley regional and merchandising managers at a meeting at the Crosley general offices.

"Production of Crosley home radio receivers started in a small way in September," Mr. Schotters told the Crosley sales executives. "The size of our initial output will depend upon how fast we can get the necessary materials."

"One of the two largest Crosley plants in Cincinnati is being converted to peace-time production," he said. "The other is engaged in vital war production that may continue for some time.

"We can produce 4,800 home radio sets per day in the one plant operating one eight-hour shift daily," he added. "When the other plant is available, we can add to our production schedules an additional 600 console radio sets per day. This is a minimum total of 5400 radio receivers per day operating one eight-hour shift. That means 1,400,000 sets a year."

* * *

In a building which only a few weeks ago housed the world's largest privately operated shell fuse plants, Stewart-Warner Corporation has begun a "pilot run" of radio sets on what is believed to be one of the longest continuous-flow production lines in the industry. From four parallel radio assembly lines Stewart-Warner engineers expect to turn out 5,000 sets daily when maximum production is attained.

Today's pilot run of one of the four production lines initiates production of 14 post-war radio models by Stewart-Warner. This number includes table models, consoles and radio-phonograph combinations. Stewart-Warner engineers stated that the run does not represent an assembly of left-over parts of pre-war models but is actual production-line output of post-war radios, under regular assembly and materials flow conditions. Some of each of the 14 post-war models were included in the pilot run.

First "Polar Freez" Units Come off Assembly Line

National distribution to dealers of "Polar Freez" cold storage food cabinets was scheduled to begin September 1, according to W. H. Schelm, president of Schelm Brothers, Inc., of East Peoria, Illinois, who have taken over the manufacture of the famous Hall line of conditioning and freezing equipment.

Production of "Polar Freez" units in 8, 12, and 16 cubic feet sizes has begun for both domestic and commercial users. In addition, Schelm will also build the former Hall air-conditioning units, furnace blowers, and attic fans.

Schelm Brothers, Inc., well-known for 40 years as manufacturers of automotive trailers and truck bodies, have just completed three years of intensive and highly specialized war work under contract with the War Department, assembling assault boats and ammunition trailers.

The Chicago Sales Office of Schelm Brothers, located at North Shore National Bank Building, 1737 Howard Street, Chicago, Illinois, is now engaged in assigning nation-wide distributorships for the Schelm line.

Stromberg-Carlson's first.

Miss E. M. O'Connor shows (left to right) C. W. Schelm, W. H. Schelm, and P. F. Schelm, officers of Schelm Brothers, Inc., how housewives and commercial users will store fresh foods in the new Schelm "Polar Freez" cold storage cabinet. This is the first unit off the assembly line.

The story is clearly before you with

WALKER

METER CABINETS

(WEATHERPROOF DRAWN FRONT)

RUSTPROOF
HANDSOME
CONVENIENT
COMPACT
ROOMY *and*
LOW PRICED

Once again Walker Electrical is able to furnish you this popular style single phase meter cabinet. Large weatherproof window and adjustable meter hanger are only two of the features that have built for them a reputation as the highest quality cabinets of this type on the market...their popularity bespeaks their perfection. Complete information and specifications are available on this and all other Walker electrical equipment.

WALKER ELECTRICAL *Company* *Atlanta*

WECO ATLANTA

MANUFACTURERS OF SWITCHBOARDS • PANEL BOARDS • SERVICE EQUIPMENT • METAL ENCLOSURES

Kelvinator Announces Manufacturing Changes

George W. Mason, president of Nash-Kelvinator Corporation, has announced that the company will introduce new assembly techniques in the appliance field and move its entire refrigerator assembly operation to Grand Rapids as part of an aggressive program designed to boost its appliance production and sales to more than 1,100,000 units yearly. Mr. Mason made the announcement as the first 1946 Kelvinator and Leonard appliances were beginning to roll off the assembly lines.

The new Kelvinator and Leonard manufacturing program calls for the expenditure in Grand Rapids of approximately $2,400,000 in the next few months, new construction, wholesale changes in production procedures and substantial increases over pre-war employment levels.

Mr. Mason revealed that although the corporation is doing much more than a reconversion job in its plants, the program is moving at a pace which indicates that production by late next spring will be at a rate 50 per cent greater than the heavy 1941 output.

Heretofore, Kelvinator and Leonard cabinets, built in Grand Rapids, were shipped to Detroit for final assembly. In the future, Detroit-built Polarsphere condensing units will be shipped to Grand Rapids, where all refrigerator final assembly will be completed.

The new program, however, calls for an even more radical change in procedure than a reversal of assembly operations, Mr. Mason declared. Of unusual significance—from the standpoint of reconversion speed and speedier delivery to retailers—is the adaptation of new assembly techniques to refrigerator assembly. Alterations and improvements will increase capacity of the final assembly lines by about 70 per cent, he said. Manufacturing floor space will be increased by more than a quarter of a million square feet, with this construction to be completed this month.

Sales Training Program Planned for N.E.W.A.

Managing Director Chas. G. Pyle announces that the National Electrical Wholesalers Association is coordinating its efforts with the Edison Electric Institute (the trade association of the utility companies), in completing a basic sales training program to be made available to all of its members.

The material is being compiled by experts in the sales training field. The cost of the material will be nominal and well within the means of every electrical wholesaler.

Discussions in several meetings of the N.E.W.A. Publicity, Sales Promotion and Sales Training Committee and the Planning Committee, in recent months, have disclosed a great need for basic sales training material for electrical wholesalers' and appliance distributors' sales organizations. Similar need in the case of the utility companies has also been noted by the Edison Electric Institute, who, since early this year, has been developing a training program for the electric utility field.

N.E.W.A. accepted the opportunity offered by the E.E.I. to jointly develop the basic sales training feature of this program. In view of the progress which has been made in the E.E.I. program and that Association's willingness to augment their own extensive efforts by combining the talents of both groups, it has been possible to develop a basic sales training course of equal worth to utilities and wholesalers and, at the same time, to insure by that arrangement utilization of the most modern and expert sales training methods.

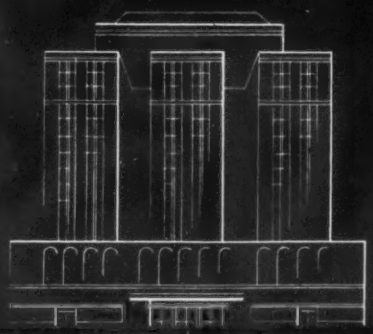
Training material will include a number of sound slide films and records, as well as silent trailer-films, salesmen's manuals, and leaders' guides. The needs of sales organizations of electric utilities, electrical manufacturers, wholesalers and dealers are embraced in the training course as it is being designed.

Electrical Contractors Await Building Program

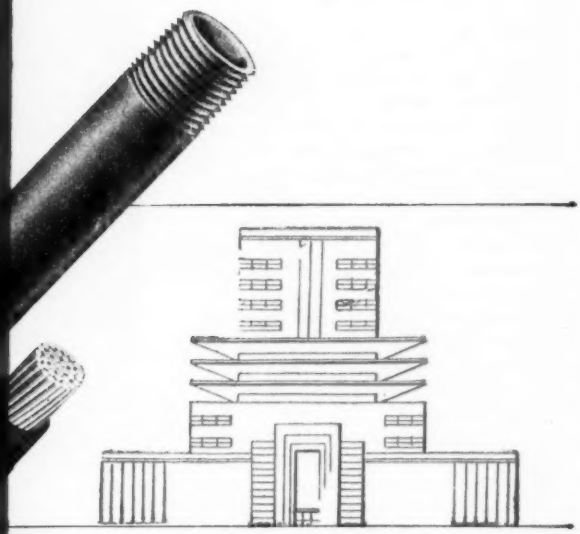
Electrical contractors in New Orleans, La., are looking with interest at a building program slated to start as soon as materials are available. According to figures gathered by the Association of Commerce through its Home Planners' Institute, some 1000 prospective home builders await only lumber release to begin spending $7,500,000 for home construction.

Expected remodeling, renovation and repair work due to begin when materials are released will account for a figure more than double the expected outlay for new construction, Chairman Wallace C. Walker, of the Association of Commerce's Home Devel-

(Above) Here are the first of the new 1946 Kelvinators coming off the lines at the company's Grand Rapids plant. On hand to witness the final assembly of the first units were, (left to right): Dr. L. A. Philipp, chief engineer; C. J. Coward, director of advertising sales promotion; O. L. Currier, Grand Rapids plant manager; R. A. DeVlieg, vice-president in charge of manufacturing, and C. T. Lawson, vice-president in charge of sales. (Right) Evaporators for the new 1946 Kelvinators take on a familiar appearance as they pour off the production lines.



Re-wiring of existing structures



and wiring of new buildings

in the post-war era will call for electrical materials that will carry a burden of demand far beyond today's expectations. Such insurance in building wiring and raceways, such extra inherent quality are certain when the National Electric System of wires, cables and raceways is employed. Specify National Electric products for all electrical wiring requirements in domestic and commercial buildings. Our 350 page handbook of electrical products and engineering data is available on request.

NATIONAL ELECTRIC PRODUCTS
WIRING SYSTEMS
WIRES AND CABLES

CONDUITS—RACEWAYS
WIRE AND CABLES FOR
EVERY PURPOSE

National Electric
PRODUCTS CORPORATION
Pittsburgh, Pa.

opment Committee, states. In addition, other construction which will require electrical work is contemplated by many individuals and commercial establishments, figures for which are not available to the committee.

Adequate Wiring For New Buildings

With an accumulated need for new homes in the nation estimated to be beyond the six million mark, numerous electric companies are preparing postwar campaigns to stress the importance of proper wiring in new dwellings and at the same time raise the electrical capacity of wiring in 30 million existing homes, according to the Edison Electric Institute, trade association of the electric light and power industry.

In a survey and report of the Commercial Planning Committee of the Institute, it is pointed out that "just as the automobile industry in the early twenties was confronted with the dual job of promoting the building of new roads and improving the traffic capacity of existing roads, the electric industry today is confronted with the necessity of raising the electrical capacity of wiring in existing residential structures and in seeing to it that new structures are adequately wired."

Promotional efforts of the industry will be directed to showing that adequate wiring consists not only of enough convenient outlets in the rooms of a dwelling, but service connections and circuits of a size sufficient to carry all needed current. Advertising will emphasize that adequate electric installations not only promote home comforts but favorably affect property values and are helpful in deferring obsolescence of homes.

With the exception of one year, there has been an upward trend in the consumption of electricity by the homes of the nation for more than three decades. That this trend will continue is shown in the fact that out of eight leading items of civilian goods which home owners plan to purchase after the war, six are electrical—radios, irons, ranges, vacuum cleaners, refrigerators and washing machines. Among washing machines increased sales are expected for the sequence type, one that washes, rinses and partly dries clothes without hand operations.

"Enough is known of manufacturers' plans," the report states, "to warrant the assertion that redesign of accepted appliances will increase their usefulness and provide greater reliability and better styling will make mass production items of such devices as home freezers and room coolers. The availability of new and better designed appliances, coupled with the public's growing appreciation of the service they render, will aid materially in reaching the goal of increased residential consumption. That a heavy pent-up customer demand exists is amply confirmed by numerous surveys made in many sections of the nation."

Not counting lights, fifty-two electrical devices can go into the average home of eight rooms, products ranging from the clothes drier in the basement to the attic ventilating fan, the germicidal lamp in the nursery to the electric blanket on the sleeping porch.

New products creating a heavier load for the power lines will be the refrigerator containing a major compartment for the storage of frozen foods. Mass production methods will create more sales for large frozen-food chests and for room coolers, weighing less because of improved design and materials.

CORY OPENS NEW OFFICES—J. W. Aledorf, president of Cory Glass Coffee Brewer Co., emphasizes his approval of new display set-up in a last minute inspection tour with H. G. Blakeslee, Cory general manager, at official dedication of new Cory offices, sales and display rooms. The spacious new quarters contain executive offices, sales rooms, and every facility for extending efficient and effective service. They represent the most modern decorative and construction features for the benefit of both employees and visitors.

General Luminescent Moves to New Plant

General Luminescent Corporation announces that it has moved into a new plant. This corporation now occupies four floors in two buildings with a total floor area of 103,000 square feet. The expansion was necessary due to the greatly increased production of Colovolt cold cathode low voltage lamps and fixtures.

The manufacturers state that the larger plant has enabled them to set up fixture production lines on several new models to be announced shortly.

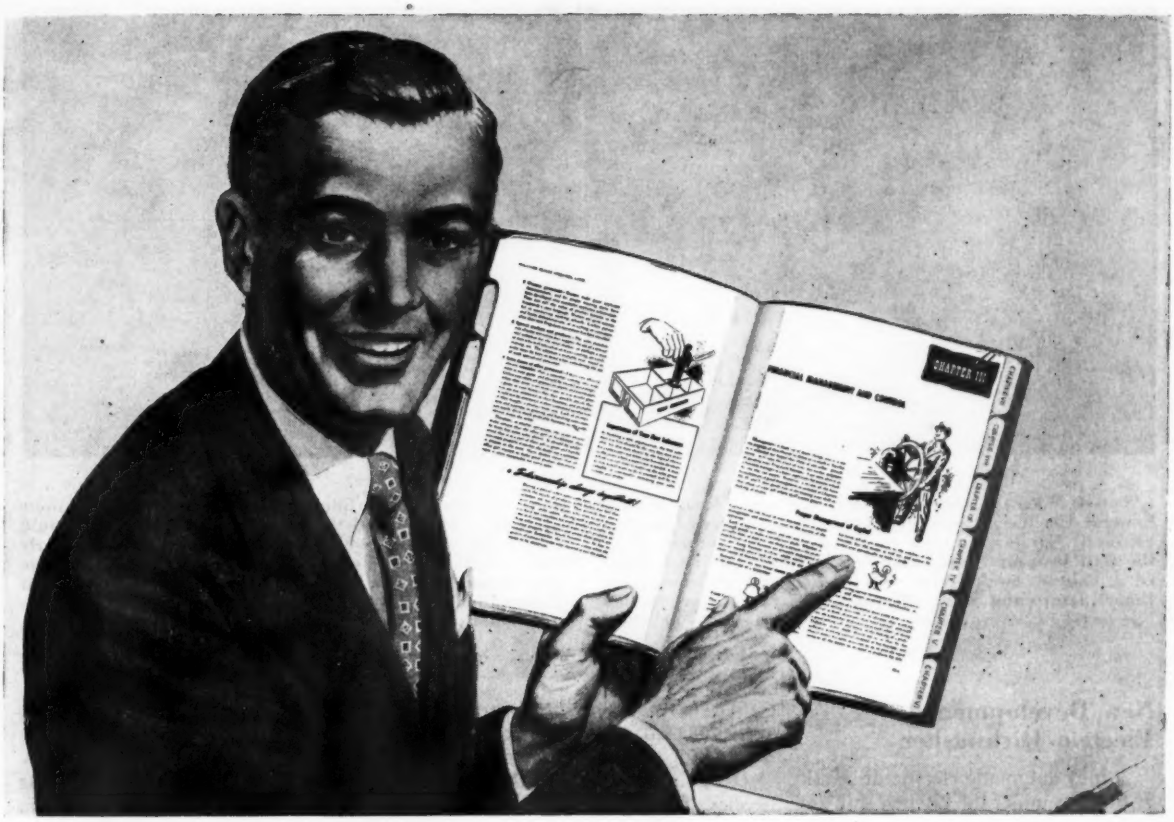
During the war, 90% of the General Luminescent Corporation production was devoted to the manufacture of luminescent aircraft instruments, dials, and computers.

Both plant and offices are now located at 732 South Federal Street, Chicago 5, Illinois.

Directors Elected at Monitor Conference

At a session of the Southern Monitor Distributors Conference held in New Orleans, seven southern appliance men were elected to a board of directors, and exhaustive plans were discussed for marketing the Monitor Equipment Corporation's full line of new electric appliances.

Members elected to the board of directors were John Paul Ahrens, of Little Rock; Alfred Uhalt. of New Orleans; M. B. Keith, of Oklahoma City; L. W. Driscoll, of Charlotte, N. C.; B. W. Kirby, of Columbia, S. C.; James A. Walsche, of Houston; and Glen C. Wasson, of Dallas.



Exclusive . . . for Frigidaire Dealers: new Operating Guide that answers vital sales and management problems!

New and different, Frigidaire's Dealer Operating Guide (Sales and Management Section) pools the experience of thousands of Frigidaire dealers over many years of successful operation in metropolitan centers, cities, and small towns . . . in every part of the country. Presents important information and helpful guidance based on this experience—in easy-to-use, quick-reference form. Covers the entire field of sales and management, as indicated by such typical chapter headings as—

Building a Successful Frigidaire Dealer Operation • *Location, Store Planning and Display Fundamentals* • *Financial Management and Control* • *Sales Records and Product Inventory* • *Compensating Salesmen* • *Training Salesmen* • *Sales Stimulation* • *Advertising* • *Publicity* • *Appliance Prospecting and Selling Plans* • *Mass Demonstrations and Exhibits* • *The Rural Market*

PROVED AIDS FOR FRIGIDAIRE DEALERS

The Frigidaire Dealer Operating Guide (Sales and Management Section)—one more addition to a library of dealer aids which already includes the Frigidaire Dealer Operating Guide (Service Section) and the Store Planning Guide, "Design for Selling"—is one more proof of the value of the Frigidaire franchise! It provides Frigidaire dealers everywhere with day-to-day guidance on the right way to operate . . . shows how to—

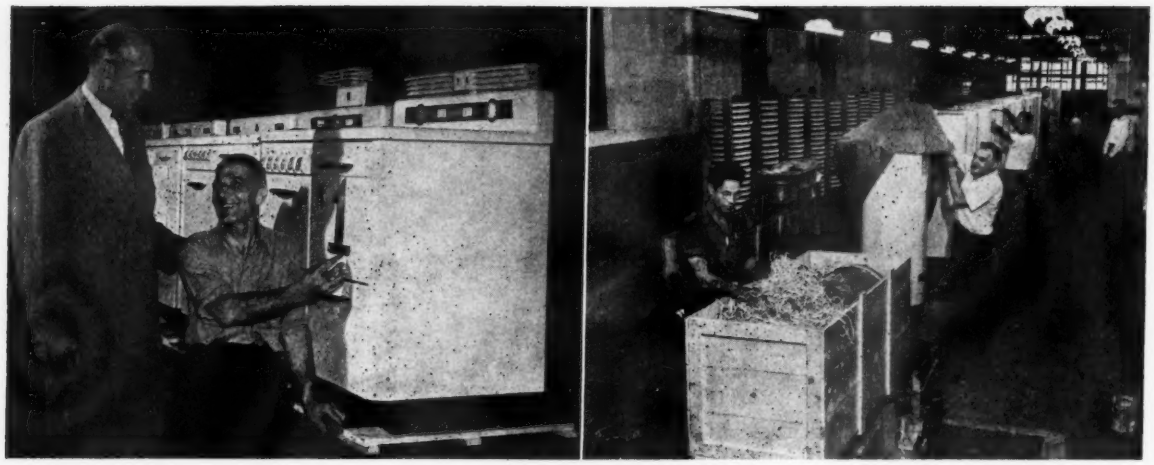
Do more of those things which have proved to be *sound.*
Do less of those things which have proved to be *unsound.*

BACK THE VICTORY LOAN!

Look to Frigidaire for Leadership through DEALER AIDS!

FRIGIDAIRE
Division of
GENERAL MOTORS
DAYTON 1, OHIO • LEASIDE 12, ONTARIO

REFRIGERATORS • RANGES • WATER HEATERS
HOME FREEZERS • ICE CREAM CABINETS
COMMERCIAL REFRIGERATION • AIR CONDITIONERS
BEVERAGE, MILK, AND WATER COOLERS



(Above) Ward R. Schafer (left) vice-president, Edison General Electric (Hotpoint) Appliance Company, watches as Virgil Casassa, veteran employee, places number 1 on the first Hotpoint range made since 1942. The first range is a deluxe model with full nickel and chrome trim, timers, lamps and other refinement. Next on the production line was an intermediate priced model, while the third range to come off the line is designed to sell at the lowest price. Mr. Schafer said that speeded up production would make some models available by Christmas, while by early 1946 ranges would be in full supply. (Right) Electric water heaters coming off the assembly lines for shipment to Hawaiian Islands for Naval housing. Models to follow for civilian use will be in stores in October, officials said.

New Development in Electric Dishwasher

A fully automatic electric dishwasher that fits under the kitchen sink and operates without soap to spray, rinse, wash and dry dishes at one touch of a button, will be offered in postwar by Edison General Electric Appliance Company. The new product is a development of the company following 29 years of electric dishwasher manufacturing.

Although dish washing is a notoriously unpopular household chore, electric dishwashing machines have not met wide acceptance during almost 29 years that they have been on the market. Early model electric dishwashers were messy, bulky, and frequently failed to perform satisfactorily. Improvements introduced in later years did not result in popularity, causing many appliance designers to conclude that women harbored emotional objections to having machinery perform so personal a task.

Hotpoint engineers at Chicago, unimpressed by that explanation, continued development work toward production of a machine that would actually remove "work" from dish washing. The resulting automatic machine performs all functions of dish washing and drying without soap, even to washing its own interior, with the housewife merely installing the dishes, pots, pans, glassware, silverware, and pressing the button.

The machines are to be "built-into" kitchens, with all plumbing and drain connections concealed and permanently connected. The water conditioner replacing soap is automatically injected during one of the washing cycles. The drying is accomplished by rapid circulation of air heated by an electric unit, and forced by a blower.

The development work on this appliance was completed directly before the war and a limited number were manufactured before war production replaced civilian goods. Hotpoint engineers predict that it will be voted the "most revolutionary" of any returning household device.

The new automatic dishwasher will come built into a cabinet sink, with front-opening door. It also will be made to install under present sink-top work surfaces. The latter type has its own cabinet. When the machine door is securely closed, one press of a button starts a series of eight operations; the first being a one-minute spraying action followed by the introduction of two gallons of water after a trap automatically closes.

The water temperature for all rinsing and washing cycles is 150° F. A motor, with a blower arrangement, goes into operation after the water is in the machine, performing a five-minute rinsing operation. When this water is drained off, the trap closes again and two gallons of fresh water is admitted. After the motor starts to drive this water against the dishes, a detergent hold in a trap in the door is automatically injected to condition the water. The scrubbing action with the treated water continues for five minutes. Then the machine drains again, and a one-minute spray rinses the dishes.

Following the rinsing and washing operations, a Calrod unit installed in the bottom of the chamber heats up, and the motor comes on to circulate the heated air over the dishes. Because the chamber is approximately the size of a large range oven, pots, pans and other utensils can be washed when the dish and glassware holding racks are removed. The machine holds approximately 65 dishes plus silverware, or the service for 12 meals.

The cabinet surrounding the dishwasher is insulated, like a refrigerator, so that working surfaces are not warmer than other cabinets in the kitchen.

While plumbing requirements for the dishwasher do not differ greatly from conventional residential facilities, care should be exercised on kitchen remodeling and new home construction to permit sufficient clearance for machine, a company engineer said.

Square D Company To Double in Size

Square D Company has such excellent prospects for broader use of its products that steps are being taken to double the size of the present plant in Milwaukee, F. W. Magin, president, has announced following a meeting of the board of directors in New York.

The Milwaukee operation is devoted to industrial electric motor con-

Special formulations FOR SPECIFIC NEEDS!

Fibron

PLASTIC TUBINGS AND TAPE

Users of flexible plastic tubings and tape secure a large increment of efficiency and economy when they specify "Fibron by Irvington." For the product they receive has been especially formulated for their own specific need. Should the *major* requirement be operation at elevated temperatures, a Fibron formulation for exactly that job can be supplied. Likewise for temperatures as low as —70° F; or for services requiring resistance to acids, alkalis, corrosive fumes, and abrasion. In each case the correct Fibron formulation is supplied. Each formulation of course, furnishes the high electrical and mechanical properties essential for efficient, long lasting insulation.

It is this Irvington policy of *"engineering* and *formulating* for specific applications," that accounts for the long service which Fibron plastic products provide . . . as well as for Irvington's continuing leadership in electrical insulation!

Fibron plastic tubings are produced in all standard opaque colors as well as transparent — diameters from .034" to 2" — in coils or cut lengths. Fibron tapes are obtainable in black and clear, in widths ½" to 3", thicknesses .004" to .030" and in convenient length rolls for hand application. Fibron wire markers are available plain or stamped, in inside diameters from .053" to ½".

An outline of *your* special requirements will receive immediate attention. Write Dept. 68.

IRVINGTON
VARNISH & INSULATOR CO.
Irvington 11, New Jersey, U. S. A.

"LOOK TO IRVINGTON FOR CONTINUED LEADERSHIP IN INSULATION"

trol and other electrical equipment chiefly for use by industry.

The present Milwaukee plant, modern in every respect, was built in 1940 and enlarged in 1942. A large tract of ground immediately adjacent already is owned by the company, so construction can be started as soon as plans are completed and materials and labor are available.

The Silex Co. Changes Distribution Procedure

As a primary step toward the streamlining of its postwar sales activities, The Silex Company has announced a change in its basic distribution procedure.

Hereafter, wholesale sales of Silex products will be handled only by a limited number of selected distributors, operating under a franchise agreement. These franchised distributors will enjoy several unusual advantages in the form of territorial and profit protection, in addition to facilities for stepped-up service for the retailers they supply.

Under the terms of the franchise, The Silex Company commits itself to a policy of intensive cooperation with its appointed distributors. The number of distributors is to be sharply limited, and franchises are being drawn up on a carefully selective basis. Moreover, to avoid wasteful overlapping and disruptive competitive conflicts, no additional distributors will be added, once the selected distributors are designated.

One of the most radical parts of the new plan is the elimination of direct sales to retailers. Hereafter sales to all classes of retailers are to be handled through the franchised distributors, who will be in a position to render closer and more detailed service to the individual outlets.

Carolina Power & Light Plans Rural Expansion

The Carolina Power and Light Company, at Raleigh, N. C., has just announced the beginning of construction on a $3,000,000 rural expansion program which calls for 2,400 miles of new lines to serve about 11,000 new customers and others who may apply for service.

The postwar rural program, according to President L. V. Sutton, calls for the eventual construction of 3,000 miles of new lines, the proposed lines to be scattered throughout the company's territory in the two Carolinas.

Although already launched, the program will depend upon the availability of manpower and materials, but unless there is an unexpected delay in getting materials, the company's schedule calls for the construction of 2,400 miles of lines by the end of 1946.

The program will require 40,000 poles, more than 3,000,000 pounds of wire, and about 10,000 transformers. Several engineering firms have been contracted to assist with line locations and staking, and a number of other firms have been employed to assist with construction and rights-of-way clearing.

Prior to 1935, the company had constructed approximately 880 miles of rural lines, serving about 12,340 customers. From June, 1935, to the beginning of the war, an additional 4,500 miles of rural lines were constructed, serving 28,524 new customers. Since September, 1941, when the Government placed restrictions on construction material, the company has constructed only about 160 miles of rural lines, serving 900 new customers.

On August 1, 1945, the company was serving 41,765 rural customers over 6,540 miles of lines.

Support the Victory Loan

The war is over, but we haven't paid the bill for it. In addition to continuing sales, there must be one more big drive for extra bonds—the Victory Loan.

Why does the Treasury need $11 billion in bonds when there is no longer a war? Why should people buy Victory Bonds after the war is over?

These questions must be answered if the Victory Loan is to be a success, and once again, the Treasury asks your help in putting the answers before the American public.

The Treasury is asking for $11 billion in the Victory Loan in order to care for the wounded and rehabilitation of veterans; because of cancellation and termination of war contracts; to prevent inflation; for bringing men home; and for maintaining armies of occupation.

"They finished their job—let's finish ours!"

Schick Expands Shaver Campaign for Consumer

A full-page, four-color ad telling the public that "Schick Is Back!" is the lead-off ad in Schick Incorporated's new consumer campaign on the Schick Electric Shaver. This ad, showing the Schick Colonel and the Schick Super-Electric Shavers in full, rich colors, was scheduled to begin in Life, Saturday Evening Post, and Colliers, in September. A number of other ads will follow during the fall in these three magazines.

Since 1942, when production of electric shavers for the general public was halted by the war, the Schick plant was engaged in war work. Schick's advertising, through Arthur Kudner, Inc., was consistently carried on for the past three years as a means of keeping the Schick name before the public and to tell Schick users how to keep their shavers operating smoothly.

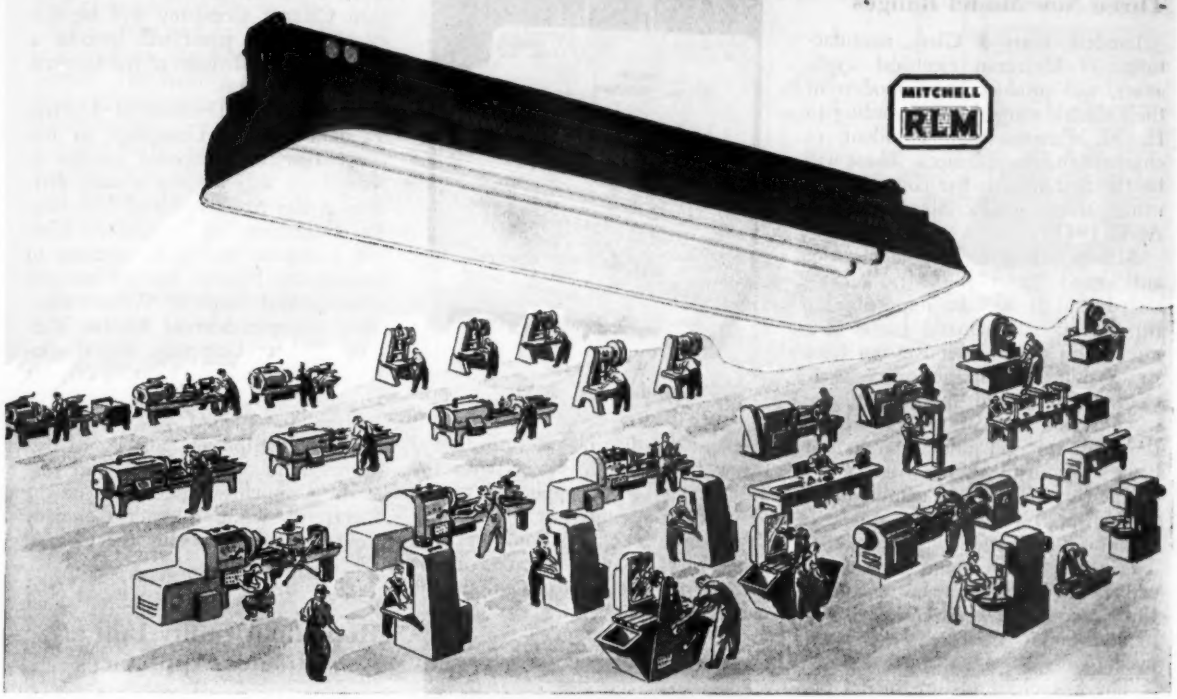
Last fall, limited production of Schick shavers for our armed forces was begun under government sanction. This production, according to Kenneth C. Gifford, president of the company, "made it possible for us to get our shaver production line in operation without interfering with our essential war work. The present lifting of restrictions, therefore, found us in a position to speed up production and to begin shipping shavers to our outlets in small quantities in September, with a constantly increasing amount each month to meet the tremendous pent-up demand for our product."

Street Lighting Modernized

The Kansas City Power & Light Company has been authorized to revise and modernize 750 miles of Kansas City street lighting equipment.

Hatbox-size Washer

A hatbox-sized washing machine is a new invention that the Washington Newsletter feature in the September McCALL'S reports to the magazine's readers. The machine is designed for apartment dwellers who wish to do their own stockings, lingerie and fine linens.



Miles and Miles of MITCHELL *Lighting Serve Industry Today*

THIS WIDESPREAD POPULARITY HAS BUILT VOLUME BUSINESS AND GOODWILL FOR DISTRIBUTORS AND CONTRACTORS EVERYWHERE.

Across the country . . . in plants of all types . . . thousands of MITCHELL fluorescent fixtures work hour after hour . . . day after day. In single units. In continuous rows.

Because of MITCHELL-engineered lighting efficiency . . . employees *see* better . . . *feel* better . . . *work* better. Because of MITCHELL design . . . easier installation and maintenance *cut service costs* and *save manpower.*

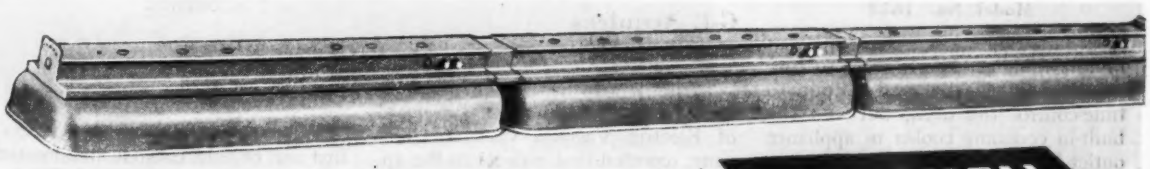
For these very reasons . . . Distributors and Contractors find MITCHELL Lighting easier to sell . . . certain to satisfy.

Tomorrow . . . MITCHELL accomplishments of today will mean *constant and growing* sales . . . *surer and greater* profits!

Makers of
Industrial and Commercial Fluorescent Lighting Equipment
Store Window Lighting • Spotlights and Floodlights
Desk Lamps • Portable Floor and Table Lamps
Bed Lamps • Ultraviolet and Infrared Health Lamps
Residential Lighting Specialties

USE THESE SALES AIDS!

Write for full-size Catalog No. 281 and Pocket-size Catalog No. 290. Each tells full story of industrial units . . . each builds sales.



Mitchell Manufacturing Company
2525 CLYBOURN AVENUE, CHICAGO 14, ILLINOIS
West Coast Factory and Sales Office: 1019 N. Madison Ave., Los Angeles 27, Cal.

MITCHELL
FIRST IN POPULARITY

Universal To Produce Three New Model Ranges

Landers, Frary & Clark, manufacturers of Universal electrical appliances, will produce three models in their electric range lines, according to H. M. Parsons, vice president in charge of major appliances. These will be the first models the company has made since production ceased in April, 1942.

Although large-scale production is anticipated in 1946, Mr. Parsons stated that it will be impossible to fill the civilian demand for electric ranges this year. Reconversion from the manufacture of gun mounts to electric ranges will take about four months, said Mr. Parsons and production will not get underway on any large scale until early next year.

The first ranges to be manufactured by Universal will include a deluxe, medium priced, and low priced model. The deluxe and medium price ranges will feature Multi-Heat control, and all three ranges will have Universal's famous two-unit 16 x 16 x 19-inch speed oven.

The Speedking, deluxe model No. 1652, will feature the tried and proven Multi-Heat control with individual signal lights for each surface unit, which decrease or increase in light intensity as the unit is turned from high to low, or low to high. Built in the back splash of this model is a combination electric clock timer and

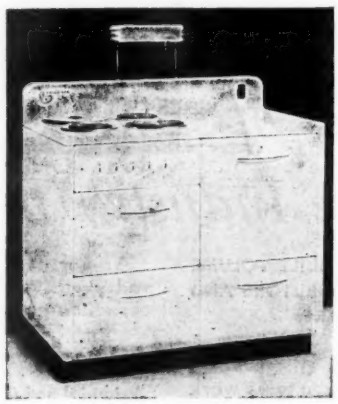
Model No. 1652

minute minder. The timer is so connected that it may be used not only to time-control the oven, but also the built-in economy cooker or appliance outlet located on the back splash.

The Super Clipper, medium priced model, No. 1651, is similar to the Speedking, in every way, except that it does not include the built-in control and timer, nor the switching

Model No. 1651

mechanism which makes it possible to throw this timer in circuit with the built-in cooker or appliance outler. However, the purchaser may at any time secure a combination clock and timer which may be installed in the field to provide time control for the oven.



Model No. 1051

The Super Planet model, No. 1051, low priced model, is identical with the Super Clipper except that the surface unit is controlled through the medium of an oven selector switch and thermostat. This model does not include either the auxiliary oven light or warmer drawer unit.

G-E Acquires Premier Division

In a statement issued September 17, Julius Tuteur, chairman of the board of Electric Vacuum Cleaner Company, reported that, subject to the approval of the stockholders of that company, the General Electric Company proposed to acquire the entire business and assets of Electric Vacuum Cleaner Company October 31.

In the event that the stockholders approve the merger, the Electric Vacuum Cleaner Company will be dissolved, and its plant will become a manufacturing division of the General Electric Company.

The Premier Division of Electric Vacuum Cleaner Company, in the event that the proposed merger is completed, will become a sales division of the Appliance and Merchandise Department of the General Electric Company and will continue to market the Premier line of vacuum cleaners, and Ralph B. Wilson, executive vice president of Electric Vacuum Cleaner Company, would continue as active head of the Premier Division. When interviewed, Mr. Wilson stated that no changes in product, distribution policies, or personnel were contemplated, and that existing franchise agreements of the Electric Vacuum Cleaner Company would be taken over by the General Electric Company.

Household Utility Unit Consolidates Appliances

A new mass-produced home utility unit, consolidating household heating, plumbing, electrical, bath, kitchen and laundry elements has been announced by Roy C. Ingersol, president of the Ingersoll Division, Borg-Warner Corporation.

The unit, which Ingersoll said he believed would "revolutionize home planning," will be produced in the division's Kalamazoo, Mich., plant and will be given a practical demonstration in 12 homes under construction near that city.

The core of the new unit, a self-contained package which can be rolled through a door framework, contains a central oil or gas heating plant with thermostatically controlled, forced warm filtered air, entire household plumbing, hot water heating, electrical connections and meters. On three sides of the core, in streamlined design, are kitchen work counters with wall and counter cabinets, sink, range and refrigerator, complete laundry equipment, and bathroom fixtures and accessories.

Miami's First Use of Cold Cathode Lighting

What very well may be Miami's first use of cold cathode illumination is included in wiring and lighting plans now being drawn by Ingalls Electric Company of that city. This installation will be made in a large, new building soon to be erected for

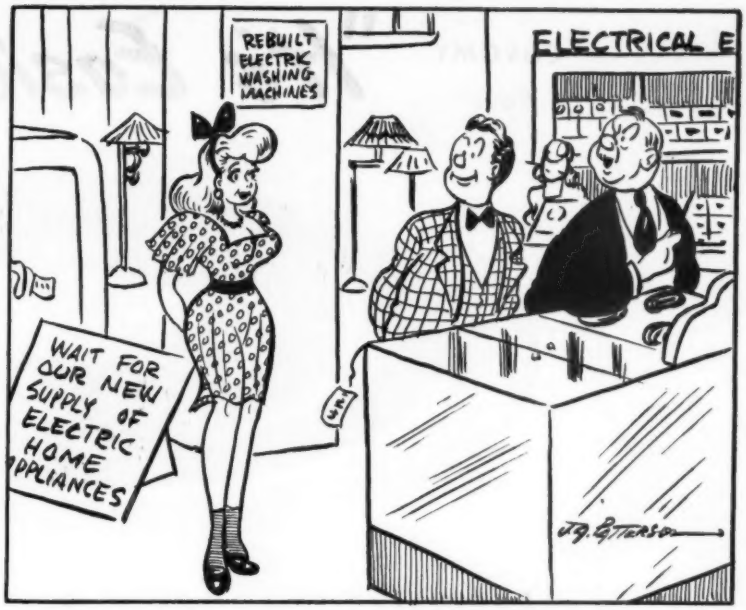
a local plumbing supply wholesaler.

The structure will house storage and elaborate display facilities. It is for the latter and for offices that the cold cathode lighting is to be employed. The fixtures selected for this type of illumination will mount three 8-foot lamps, each, and present plans call for their installation as a continuous strip around the showroom and across office desks. Warehouse lighting is to be fluorescent.

"Reconversion-to-Sales" Theme at Conference

The advance reconversion planning of the Frigidaire Division, General Motors Corporation, Dayton, Ohio, recently passed another milestone as a nationwide representation of Frigidaire branch managers and distributors and their sales managers concluded a three-day "Reconversion-to-Sales" conference; thus making Fridaire one of the nation's first major industries to attain that stage of peacetime manufacture whereby plans for distribution and sale of their products to the public may be formulated and carried out.

The first postwar sales conference included a showing of the new Frigidaire products, sales campaigns to be utilized in presenting the sorely missed Frigidaire appliances to the public after a wartime dearth of almost four years, and the organization's plans for future manufacturing. The distributors were further enlightened as to the availability of refrigerators, electric ranges, and many commercial products during a tour of the huge Dayton plants which are daily producing an increasing number of household appliances.



"It's just the boss's kid — pay no attention to her and she'll go away!"

The Frigidaire Division, General Motors Corporation, Dayton, Ohio, conducted its first postwar sales conference in Dayton on September 12, 13 and 14 for all Frigidaire branch managers and distributors and their staff. During the three-day "Reconversion-to-Sales" meetings the nationwide representation of distributors spent a considerable period of time in the huge factories, acquiring first hand information on the ever-increasing production of Frigidaire refrigerators, electric ranges and commercial products.

Among the officials of Frigidaire who addressed the group were: E. R. Godfrey, general manager; P. M. Bratten, general sales manager; M. M. Roberts, works manager; L. A. Clark, assistant general sales manager; H. F. Lehman, assistant general sales manager; S. M. Schweller, chief engineer; P. H. Brennan, commercial sales manager; H. M. Kelley, appliance sales manager; F. H. Peters, advertising manager; W. F. Switzer, manager market research and organization; E. Gilbert, sales promotion manager; P. V. Sprout, service manager; O. F. Kuhlman, product distribution manager; and G. A. Ames, vice-president, General Motors Acceptance Corporation.

Though production of Frigidaire refrigerators is increasing daliy, all refrigerators are now frozen in a government stockpile. Just when the War Production Board will release refrigerators for public consumption is still a matter for conjecture, but present indications point to an early removal of the sales restrictions. Meanwhile, a recent WPB ruling has removed all restrictions from the manufacture and sale of electric ranges. Production of the electric ranges began at the Frigidaire plants following the termination of a machine gun contract in July of this year and are now available to the public in increasing quantities.

Immediately following the close of Frigidaire's "Reconversion-to-Sales" conference recently in Dayton, all Frigidaire distributors will conduct dealer

CHROMY
Says:

"It's Easier to Sell

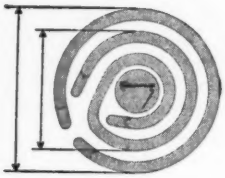
EXCLUSIVE CHROMALOX DESIGN PROVIDES EVER-LEVEL COOKING SURFACE

PATENTED TRIANGULAR CROSS-SECTION

The top surface is flatter and wider. Tubes have greater structural strength. Entire contact surface remains uniformly level under all conditions.

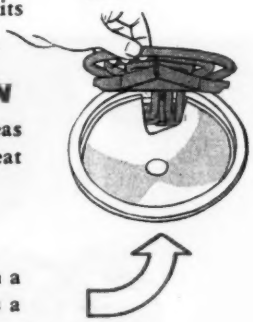
EXCLUSIVE CHROMALOX SURFACE PATTERN

Arrangement of coiled tubes provides uniform heat over entire surface—three-point anchorage permits free-lateral expansion without distortion.



ADAPTABLE TO ANY SIZE POT OR PAN

Each unit has two separately controlled cooking areas for greater flexibility and economy. Concentrated heat in center coil is ideal for coffee percolator.



ALL PARTS EASILY CLEANED

Cooking Unit lifts up and can be cleaned all over in a jiffy. Reflector Pan slides out and is as washable as a china dish.

CHROMALOX TRIANGULARS ARE MADE WITH "INCONEL"— THE FINEST HEAT-RESISTING ALLOY AVAILABLE

Fast! Easy to Clean! Long Life! Economical!

the Best!"

CHROMALOX TRIANGULAR

Electric RANGE UNITS

FOR ANY MAKE OR SIZE ELECTRIC RANGE

Easier to Service!

Any part . . . either of the two coils . . . or the entire unit can be replaced in a few minutes. A screw driver is all you need.

Fit All Ranges!

Only two service sizes to stock. CHROMALOX Adaptor Rings insure a perfect fit in any range opening. Quicker servicing, smaller inventory and greater customer satisfaction mean more profit to you.

Write to Edwin L. Wiegand Co. for details on the new CHROMALOX Triangular Unit and Catalog CF-145 for information on the complete line of CHROMALOX Electric Range Units and Adaptor Rings.

MANUFACTURED BY EDWIN L. WIEGAND COMPANY

7600 Thomas Boulevard · CHurchill 3200 · Pittsburgh 8, Pennsylvania

Representatives in Principal Cities—We Will Connect You

ON NEW RANGES AND FOR REPLACEMENT

CHROMALOX

means ELECTRIC COOKING AT ITS BEST!

RC-9

conferences in each district throughout the country. At the dealer meetings they will pass on the information gathered in the Dayton meetings. The dealer conferences will make Frigidaire one of the first major reconverted manufacturers to present completed plans and actual sales operations to their field organization.

Distributors To Receive Norge Range Deliveries

First deliveries of Norge ranges from the company's recently acquired plant in Effingham, Ill., soon will be made to distributors, it was announced by M. G. O'Harra, vice-president and general sales manager of the Norge division of Borg-Warner Corp.

Initial limited flow of the products from this factory started in mid-September when the first Norge range delivered to the trade was turned over to the Effingham Norge dealer at ceremonies marking the event.

In making the announcement, O'Harra stressed the point that while production is increasing daily it probably will remain small for some time as a result of continuing reconversion activities in the plant. "However," he stated, "we are making every effort to boost output just as rapidly as possible. Our aim is to provide distributors with adequate quantities for full dealer display at the earliest opportunity."

He said the company had been confronted with many problems in converting the plant to range manufacture—transferring machinery from Muskegon, Mich., former site of production, remodeling the factory, and training new employes. Presently, heavy metal stamping and forming presses are being installed, and completion of this phase of conversion will mark complete transfer of range output to Effingham. Sheet metal parts for ranges now being assembled were made in Muskegon prior to shipment of the presses.

GOOD ADVICE FOR THE INDUSTRY—Bruce A. Fleming (left), vice-president sales, and Ernest N. Calhoun (right), president of the Edwin L. Wiegand Company, Pittsburgh, manufacturers of Chromalox Electric Range Units and Electric Heating Units for industrial use, point to theme presented at the 1945 Chromalox conference held recently in Pittsburgh. Chromalox representatives from the United States and Canada viewed improved models of electric strip heaters, immersion heaters, cartridge heaters, and tubular heaters. Feature of the new products shown was the new Chromalox Triangular Range Unit of which Mr. Calhoun said: "It is the most recent advance in good electric cooking."

J. D. Allen, general sales manager, Fresh-'nd-Aire Co., looking over section of display room, at festivities celebrating formal opening of new offices, sales and display rooms, in Chicago, Illinois.

Fresh'nd Aire Company Located in New Offices

Fresh'nd Aire Company's new offices, sales and display rooms at 221 North LaSalle Street, Chicago, were officially opened recently.

General Sales Manager J. D. Allen and other Fresh'nd Aire executives welcomed business and civic leaders, customers, representatives of magazines, the trade press, and newspapers.

Indicating the vast expansion of facilities required to meet the rapidly increasing trade demands, the spacious new offices present every modern convenience for rendering efficient service.

Among the many outstanding features is the display room—its unusual glass brick walls providing a handsome setting for the gleaming array of Fresh'nd Aire air circulators. High and low stand models are ranged conveniently about the room for easy demonstration of the many features which have made Fresh'nd Aire the leader in the industry.

G-E Ranges Predicted For Public in December

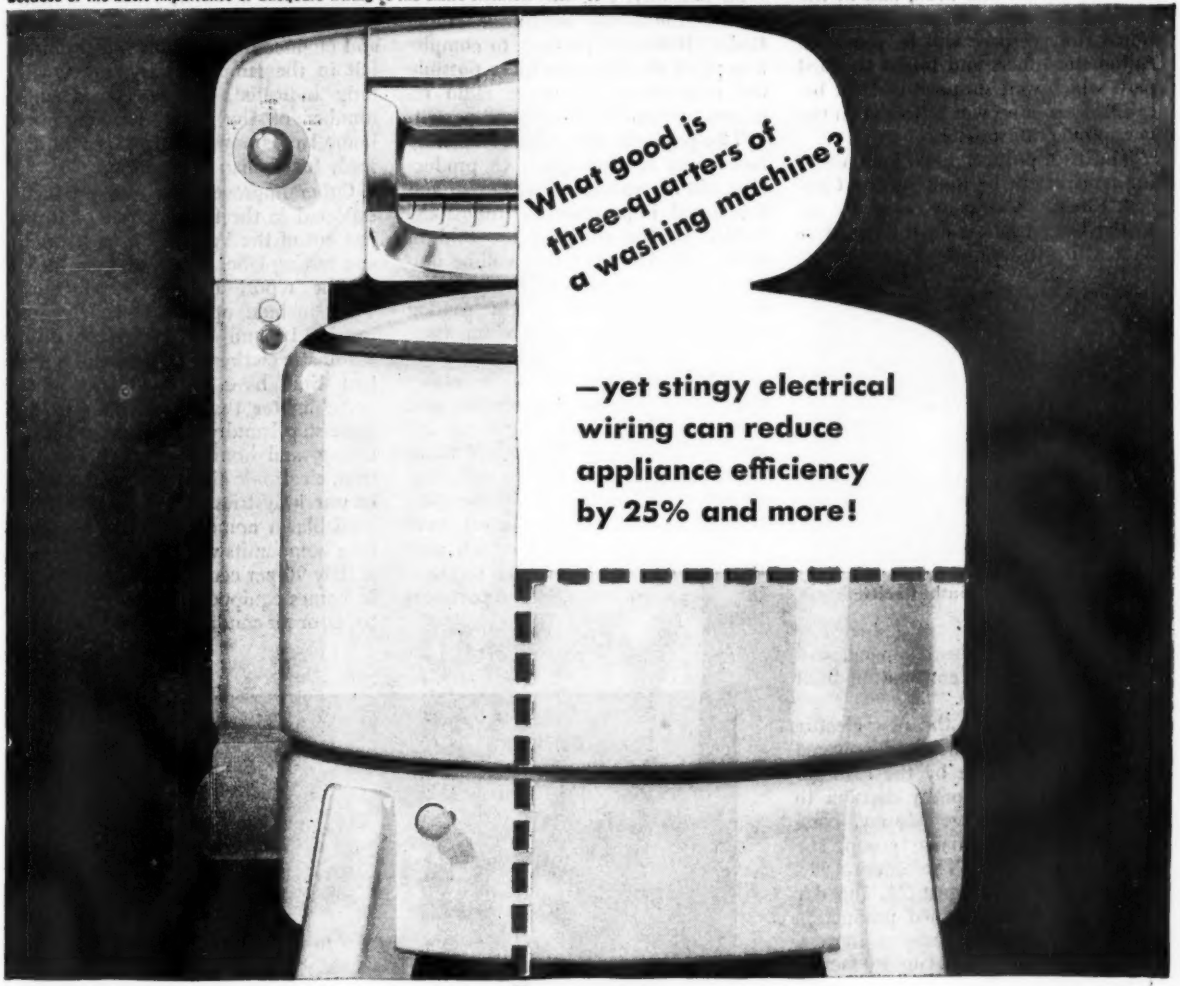
The first postwar General Electric ranges that rolled off the production line here recently will probably be generally available for sale across the country in early December, J. R. Poteat, manager of the company's Range and Water Heater Divisions, of Chicago, Ill., has announced.

Outlining General Electric's plans for obtaining the speediest possible broad distribution of household electric ranges, Mr. Poteat said that the company will build three ranges—a low priced, a medium priced, and a deluxe model. Ranges will be shipped to distributors as they are produced, and it is expected that by November dealers in all parts of the country will have samples, with a good chance of making delivery of the first orders on their books before Christmas.

Ranges will be shipped on an allocation basis to all parts of the country. Allocations are based on 1941 sales by areas, with due allowance made for population shifts. Thus each part of the country will receive its proportionate quantity of the total production. It is expected that prewar production rates will be achieved by January of 1946.

The new ranges will be similar to but definitely improved over those produced in 1942, Mr. Poteat said. For example, high-speed cooking elements will be standard in all ranges

Because of the basic importance of adequate wiring to the entire electrical industry, Anaconda is presenting messages like this in a wide list of national publications


What good is three-quarters of a washing machine?
—yet stingy electrical wiring can reduce appliance efficiency by 25% and more!

Wire ahead

Anywhere from 25% to 50%! That's what you can lose in service from appliances when electrical wiring is inadequate.

Have you checked up on the wiring for *your* postwar electrified home? Will it carry electric range, refrigerator, laundry equipment, garbage disposer, exhaust fan? How about the many other appliances—plus, perhaps, advanced heating, air-conditioning and, of course, television?

Plan your wiring now to get all the service you pay for in these living comforts. Make sure wiring is at least equal to future needs.

Business Executives! The same goes for *your* postwar plans. Don't limit production with out-of-date wiring. Don't risk expensive alterations for emergency electrical expansion. It costs nothing now to check with consulting or plant power engineer, electrical contractor or power salesman. They'll say: Wire Ahead! Anaconda Wire & Cable Company, Subsidiary of Anaconda Copper Mining Company, General Offices: 25 Broadway, New York City 4, Chicago Office: 20 North Wacker Drive 6, Sales Offices in Principal Cities. 63810

DON'T BE PENNY-WISE AND POWER-FOOLISH

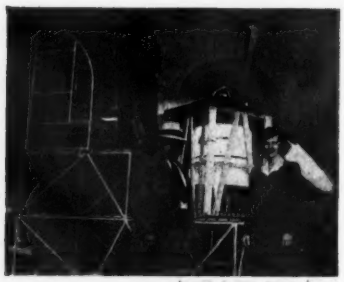
✓ *Check your wiring plans before they check you!*

BUY VICTORY BONDS... HELP ASSURE WORLD PEACE

ANACONDA WIRE & CABLE COMPANY

on both surface and oven, and in the low-priced model 50 per cent additional storage space will be provided. Automatic timers and bright finished parts which were dropped in 1942 because of scarcities will be found on the new production models.

The first postwar household washing machine to be built by the General Electric Company went by air to the Navy Seabees on the island of Tinian in the South Pacific. The



Off for the South Pacific

washer, a gift of the company, will replace a makeshift contraption built by the Seabees.

An offer to trade the new electric washer for the windmill-powered makeshift was made by the manager of G. E.'s home laundry division to Vice Admiral George Murray, commander of the Marianas group, stationed at Guam. The admiral accepted by cable August 24, the day General Electric resumed production of washers after a three-year interval during which its home laundry factory turned out hundreds of thousands of bazookas, searchlights, and torpedoes.

Westinghouse Lines Well into Production

Major appliances for homes are expected to begin rolling off the lines of the Westinghouse Electric Corporation in considerable volume in October and November, the Company's Stockholders' Quarterly reported recently.

"The ending of the war in August found many Westinghouse reconversion plans already in partial operation, due to the earlier decision of the War Production Board to permit limited production of electric refrigerators and some other electric home appliances," the Quarterly stated. "Assembly lines and manufacturing aisles were being readied at the Mansfield, Ohio, and East Springfield, Mass., plants of the Electric Appliance Division for the production of refrigerators, irons, ranges, and Laundromats, the new laundering machines."

At Sunbury, Pa., the Quarterly reported, the newly organized Home Radio Division is pushing to completion plant alterations to make possible the manufacture of home radio receivers as soon as conditions permit.

The products with which Westinghouse will resume appliance production will incorporate many design and functional improvements, the stockholders of the company are told in the report. However, they will be similar to pre-war models with any radical design changes awaiting the passing of sufficient time to allow for their thorough proving.

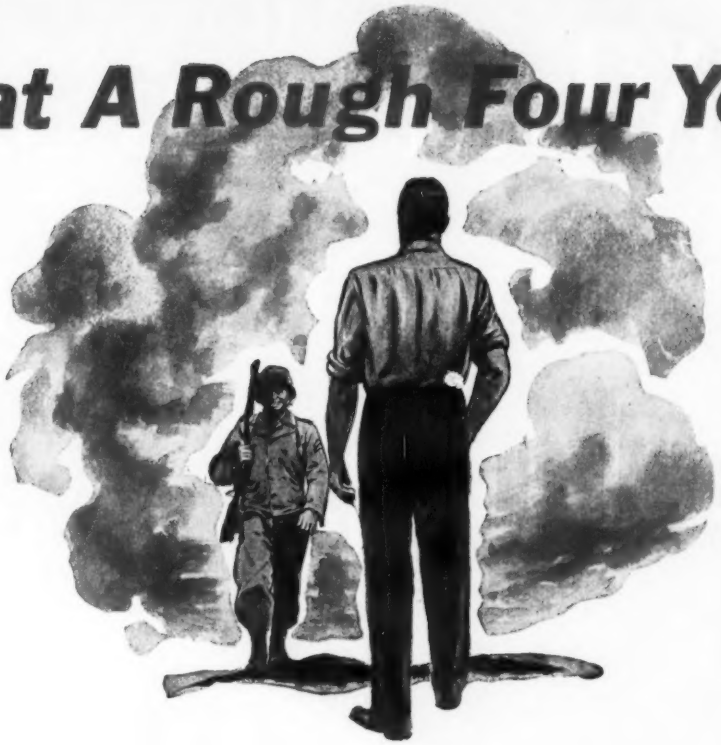
"The company's immediate objective is to produce time-tested and consumer-accepted appliances needed most by the public, to produce them with minimum delay and in sufficient quantities to make assembly-line operations efficient, and to take up some of the employment slack which may be caused by cutbacks and terminations of war contracts," the report continued.

Effects of startling developments and uses resulting from wartime research and engineering probably will be first felt in the lamp industry, the Quarterly indicated, and a considerable number of the new special-purpose home lamps now are, or soon will be, ready for civilian production.

Other improved and new products expected in the future, some of them just out of the Westinghouse research and testing laboratories, also are listed in the report to the stockholders. They include upright home freezers in six, 16 and 25 cubic feet sizes; automatic clothes dryers which for the first time have done something to make lighter the middle job in the three-step laundry process of washing, drying, and ironing; and the Precipitron, electronic air cleaner widely used in war industries, which will become available in home sizes. The Precipitron home units will rid air of approximately 90 per cent of all dust and dirt in homes equipped with warm air furnaces or air-conditioning systems.

ROASTERS MOVE ALONG WESTINGHOUSE PRODUCTION LINE—Electric roasters, for the first time since early 1942, are rolling off the production line at the Westinghouse Electric Appliance Division plant, Mansfield, Ohio. Here an employee assembles the outer covering of the roaster to the roaster inset or well. The new roasters are of 18-quart capacity and will come with blue trim and a polished aluminum cover with a glass "look-in" top panel. They will also come equipped with a set of three oven dishes.

What A Rough Four Years



...And before we could take a deep breath, we were given another challenge—adapting *without delay* new developments, new techniques to civilian uses.

We like to think of our wires and cables as we think of the veterans now returning to civilian life. These veterans will not be the same people we sent off to war. They are battle-tested—they have grown up—they are ready to take on greater responsibilities than before.

Our wires and cables, too, are ready to take on new responsibilities. They have had to do jobs tougher than any wire ever faced . . . wherever the war took them—and it took them everywhere . . . moist, steaming jungle to bleak, frozen wastes. Whatever the conditions and demands—they came through the better for them.

What does this mean to the Electrical Wholesaler and Electrical Contractor? Just this—a new and complete line of merchandise made up of such products as Building Wire with rubber, synthetic and plastic insulations (including Laytex*—smaller in diameter and lighter in weight), Lead Cables, Royal Line of Rubber Jacketed Portable Cords and Cables, Non-Metallic Cables, Flexible Cords, and many others . . . all more highly developed, more efficient than ever before.

Yes, it was a tough four years . . . we learned a lot . . . and now our new knowledge belongs to you.

*Reg. U. S. Pat. Off.

U. S. ELECTRICAL WIRES AND CABLES

Serving Through Science

UNITED STATES RUBBER COMPANY

1230 SIXTH AVENUE • ROCKEFELLER CENTER • NEW YORK 20, N. Y.

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Westinghouse
PLANTS IN 25 CITIES ... OFFICES EVERYWHERE
MAZDA LAMPS FOR SEE-ABILITY

just this

TAKE THESE LAMPS—fluorescent lamps by Westinghouse. What is there about them that makes them so bright, so long lasting? Westinghouse research . . . electrical "know-how" . . . precision manufacturing experience.

HOLD A FLUORESCENT lamp in your hand—this Westinghouse fluorescent—and it may seem about the same as any other fluorescent. But just put it in a fixture. Then, when you've seen it glowing uniformly bright from end to end . . . when you think of the thousands of satisfied Westinghouse fluorescent users, many of them *your* good customers . . . *that's* what you can count on in a lamp that says "Westinghouse". That's when you're happy to be selling *Westinghouse Lamps.*

WESTINGHOUSE PRESENTS *John Charles Thomas, Sunday 2:30 P. M., E. W. T., N. B. C.*
Tune in Ted Malone, Monday through Friday 11:45 A. M., E. W. T., Blue Network.

WESTINGHOUSE ELECTRIC CORPORATION LAMP DIVISION, • BLOOMFIELD, N. J.

Chief designer...

LOOKS like—yes, it is our old friend, Mrs. Home-maker! She's really the chief designer of Proctor appliances. Because we ask for her opinions regularly by questionnaire and spot survey. When the results are tabulated, only then do our nationally known engineers and designers go to work...to make her appliance dreams come true.

COMING!

...her greatest appliance creations!

After victory there'll be many newsmaking features, many surprise developments in Proctor Electric Appliances. Plan now to stock and sell 'em. Till then, keep on buying War Bonds.

PROCTOR

NEWSMAKER

IN APPLIANCE MERCHANDISING

PROCTOR ELECTRIC COMPANY—*DIVISION*, PROCTOR & SCHWARTZ, INC., PHILADELPHIA 40, PA.

News About People

A. C. Scott, vice-president in charge of sales of the Apex Electrical Manufacturing Company, Cleveland, Ohio, producers of washers, ironers, and vacuum cleaners, announces the recent appointment of **Frank S. Ryan** as advertising and sales promotion manager.

Mr. Ryan has had considerable experience in electrical appliance advertising and merchandising, from both the retailing and manufacturing angles. For three years he was assistant to the merchandising manager of house furnishing departments of the Higbee Company, leading Cleveland department store, later joining the Merchandise Division of the Westinghouse Electric Corporation, Mansfield, Ohio, in charge of advertising production for refrigeration and laundry equipment.

* * *

To supervise an expanded advertising and sales promotion program, **Gerald Hulett,** vice-president of Electromaster, Inc., of Detroit, announces the appointment of **Roy B. Blanchard** to the position of director of advertising.

Mr. Blanchard has a wide background of experience in this field, having been advertising executive at the Chrysler and Plymouth Divisions of the Chrysler Corporation for the past five years. Previously, he was sales promotion manager of the Norge Division, Borg Warner Corporation, and prior to that he was with the Buick Motor Company, where he was an advertising and sales executive.

This appointment precedes the placing on the market of a complete new line of modern electric ranges and water heaters, according to Mr. Hulett, who states that Electromaster's products will continue to empha-

Roy Blanchard

FOR SAFETY'S SAKE . . . USE CONDUIT *(Full Weight Rigid Steel)*

WHEN YOU REWIRE FOR PEACE

MUCH of America's wartime construction has been built on strictly an emergency basis--good enough "for the duration" perhaps, but questionably adequate for the long term. This fact, combined with the tremendous need of steel for other war uses, has been used to justify relaxation of the high standards of the National Electrical Code for the protection of electrical wiring.

Fortunately, the end of makeshift methods forced on us by war emergency is in sight. Steel will be available again in unlimited quantities. You can again use full-weight rigid steel conduit wherever you wish to provide dependable protection--especially in hazardous locations and occupancies -against moisture, vapors, dust, and explosions.

So when you rewire for the lasting peace to come, you can rewire for lasting protection, too, by using Youngstown's standard-threaded, full-weight rigid steel conduit-Buckeye Conduit.

YOUNGSTOWN
THE YOUNGSTOWN SHEET AND TUBE COMPANY
YOUNGSTOWN, OHIO
Manufacturers of
CARBON · ALLOY AND YOLOY STEELS

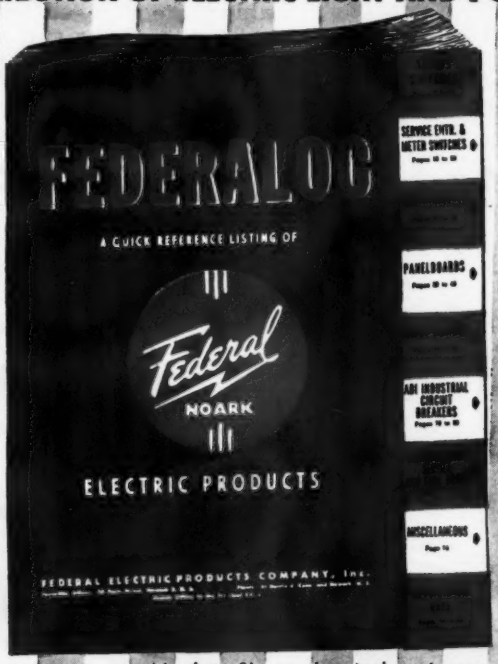
Ask your distributor for:
Youngstown Buckeye Conduit-Pipe and Tubular Products - Sheets - Plates - Electrolytic Tin Plate-Coke Tin Plate-Bars-Rods-Wire-Nails-Tie Plates and Spikes.

FEDERAL ELECTRIC PRODUCTS COMPANY, INC.
50 Paris Street, Newark 5, N. J.
Yes! . . . I want a copy of the FEDERALOG
Name and title.....
Company .....
Address .....
☐ Please place my name on your mailing list for all future material

THIS COUPON WILL BRING YOU YOUR COPY OF THE

FEDERALOG

ONE OF TODAY'S MOST IMPORTANT CATALOGS ON EQUIPMENT FOR THE CONTROL AND DISTRIBUTION OF ELECTRIC LIGHT AND POWER



No data file on electrical equipment is complete without a copy of the FEDERALOG . . . a dependable guide to the newest developments in Motor Controls, Safety Switches, Circuit Breakers, Service Equipment, Panelboards and Multi-Breakers.

FEDERAL ELECTRIC PRODUCTS COMPANY, INC.

EXECUTIVE OFFICES: 50 PARIS ST., NEWARK 5, N. J. • PLANTS: HARTFORD, CONN. • NEWARK, N. J.

size both beauty and utility in their design, incorporating a number of improvements to provide added efficiency and economy.

* * *

J. Warren Roberts has recently been appointed branch manager of the Allis-Chalmers office in Chattanooga, according to **Frank Angle**, manager district offices.

Prior to joining the Allis-Chalmers Atlanta district office in 1941, Mr.

J. W. Roberts

Roberts was employed by the Nashville Railway and Light Co., Tennessee Electric Power Co., Allied Engineers, Inc., and Electric Power Borad of Chattanooga.

* * *

Merger of the illuminating engineering department with the commercial engineering department of the Westinghouse Lamp Division was announced recently by **W. J. Massey**, general lamp sales manager.

D. W. Atwater, manager of the illuminating engineering department since 1942, will head the newly-consolidated departments as manager of commercial engineering, Mr. Massey said. **Ralph R. Brady**, former manager of commercial engineering, has been appointed manager of electric discharge lamp sales.

D. W. Atwater

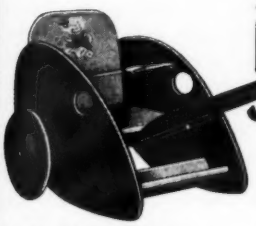
AVAILABLE NOW
SMALL ITEMS TO BUILD
BIG PROFITS

"TEN LITTLE INDIANS"

Cedar Chest—No. 2

A roomy, sturdy and well made Tennessee Red Cedar doll chest that sells on sight. An Avalon Brown creation beautifully finished and decorated with "Ten Little Indians." A big Christmas seller . . . get your order in now.

No. 2. Specifications: 21 inches x 12½ inches x 10 inches. Approximate weight 14 lbs.



NEW ROCKET SULKY

METAL WHEELS
RUBBER TIRES

No. 110. Packed two to a package. Shipping weight per package—16 pounds, approximately

A Top-Line value that is "tops" in popularity. Beautifully finished two-tone sulky in the eye-catching Rocket design with colorful juvenile decal. Metal tubular handle.

Juvenile WHEELBARROW
ROCKET DESIGN
No. 600

RUBBER TIRE

Sturdy, useful and practical. A toy with a purpose! Let the youngsters "help" with this beautifully designed Rocket wheelbarrow decorated with brightly colored decal.

No. 600. Packed 6 to a crate. Shipping weight approximately 73 lbs. per crate.

Address Dept. 130

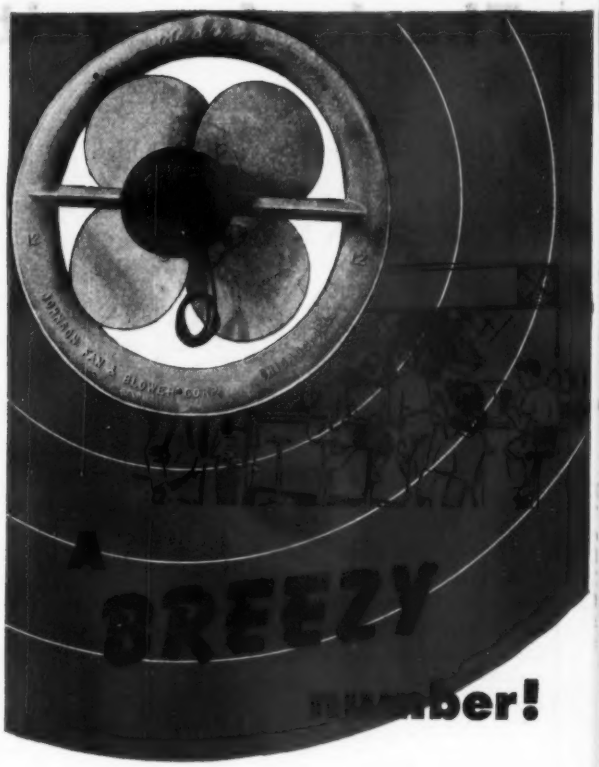
TOP LINE
TOYS APPLIANCES

TENNESSEE VALLEY
ASSOCIATED MARKETERS

GAMBILL BUILDING, NASHVILLE, TENNESSEE

CHRISTMAS MERCHANDISE
AVAILABLE NOW

WRITE FOR CATALOG AND PRICES



BREEZY? . . . you bet! But sturdy and well constructed too. This Johnson Healthaire "Special 12" is one of our most popular selling items.

Four reasons for this stand out performance are:

1 HANDY TO STOCK. They are individually packed in special corrugated containers.

2 EASY TO SELL. Reasonably priced for quick turnover.

3 SIMPLE TO INSTALL. Their compact size and construction save many hours of labor.

4 ECONOMICAL TO OPERATE. The "Special 12" is designed to move the most air at least cost. It solves any one of a dozen or more small ventilating problems.

Tie-up with this fast-selling, profit-making item today.

Order from . . .

Johnson Fan & Blower Corp.

H. C. BIGLIN, 177 HARRIS ST., N. W., ATLANTA 3, GA.

Thanks for waiting!

Uncle Sam has been served . . . **Tuttle & Kift** is proud of its contribution to the development of the **Atomic Bomb.** Although ours was a small part, the entire **Tuttle & Kift** organization went all out for the **Manhattan Project.** Thanks for waiting—we know you'll agree that the results have proven our time has been well spent.

Now we can promise you that with the knowledge gained from our war production added to our quarter century experience in the field of Electrical Engineering, we will develop and manufacture even better **T K products** than the fine ones to which you have become accustomed.

TUTTLE & KIFT, INC.

1825 NORTH MONITOR AVENUE · CHICAGO 39, ILLINOIS

MANUFACTURERS · DOMESTIC AND INDUSTRIAL HEATING UNITS · SWITCHES · CONTROLS

New Electrical Books

High-Frequency Induction Heating

By Frank W. Curtis. Published by McGraw-Hill Book Company, Inc., 330 West 42nd Street, New York 18, N. Y. 235 pages, illustrated. Price $2.75.

The purpose of this book is to offer the user of high-frequency induction-heating equipment basic technical application details that will serve as a ready reference in connection with the heating of metal parts, such as may be required for hardening, heat-treating, brazing, soldering, annealing, stress-relieving, forging, upsetting, or melting.

The text includes coverage of heating coils and fixtures as used in hardening and joining operations, since these constitute the main requirements of successful application. References are made to product design because technically there are advantages in considering the fundamental needs of induction heating when constructional details of a component are originated. In view of the association so often made between induction heating and dielectric heating, a brief chapter has been included on the latter, mainly for the purpose of showing the differences between these two methods of heat transfer.

Chemistry for Electroplaters

By C. B. F. Young. Published by the Chemical Publishing Co., Inc., Brooklyn, N. Y. 205 pages. Price $4.00.

This book, written in clear and simple language, accumulates from the immense realm of chemistry those theories and definitions which have a bearing on electroplating. Without assuming any previous knowledge of chemistry, it leads the electroplater step by step to the understanding of the principles of chemistry and the chemical phenomena arising in his work in the plant.

The author, who has long experience in teaching chemistry to electroplaters, is well aware of the difficulties the student will have in mastering this subject and succeeds in giving the electroplater the fundamental knowledge and initiative for the solution of his problems.

Praticularly useful is the list of questions at the end of each chapter. This will serve as an excellent review for the reader to check his comprehension and mastery of the chapter.

Principles of Radio

By Keith Henney. Published by John Wiley & Sons, Inc., New York 16, N. Y. 535 pages, illustrated. Price $3.50.

Fifteen years have elapsed since the first edition of this elementary textbook on radio appeared. The book was originally written for the student who wanted to know the basis upon which radio communication existed, and this viewpoint has been maintained through subsequent editions.

Much new material has been added to this fifth edition. As always, the radio art forges ahead into new and adventurous ground. Wave guides, microwaves, klystron tubes, frequency-modulation broadcasting, measuring distances by radio, transients—some of these matters are new and had not been heard of when the first edition appeared; others are old in the art but now assume fresh importance.

Numerous illustrations and examples for practice make this book particularly suitable for self-instruction.

Television Programming and Production

By Richard Hubbell. Published by Murray Hill Books, Inc. 232 Madison Ave., New York 16, N. Y. 207 pages, illustrated. Price $3.00.

Television Programming and Production is a new book of vital interest to everyone looking forward to television and wondering about its post-war future. It will appeal particularly to those contemplating television as a possible future profession because it not only reviews studio techniques now in use but anticipates advances in equipment and methods of the future.

An unusual feature of the book is the inclusion of more than fifty carefully selected photographs illustrating various types productions and production problems.

Electrical Power Uses In Marine Service—Vol. III

By J. M. Dodds. Published by The McGraw-Hill Co., 330 West 42nd Street, New York 18, N. Y. 444 pages, illustrated. Price $4.00.

The third of three volumes of the Marine Electricians' Library gives a knowledge of the fundamentals of the ordinary incandescent lamp, as well as new applications of electrical principles in modern lamp sources. It also discusses the various new lamps for shore plant and marine use, such as mercury vapor lamp, marine searchlights, and the fluorescent lamp.

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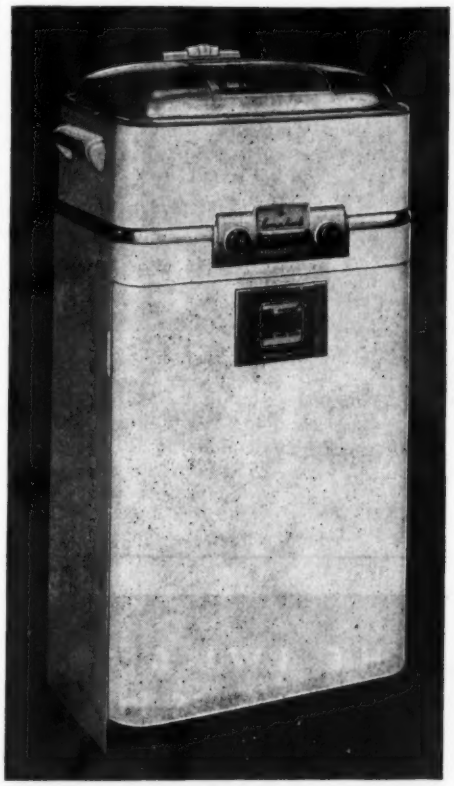
Electric Roaster



● The advanced Everhot Electric Roaster, embodying unique, startling features of design, construction and performance combined with traditional Everhot quality and dependability is now ready for distribution . . . Completely engineered — thoroughly tested this new Everhot fully meets the expectation of dealer and consumer for extraordinary post-war advancement in such utilities.

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Advanced styling brings new beauty and symmetry to cabinet and roaster ensemble presenting sheer, easily cleaned surfaces, artistic trimmings, toe-in plate, and rigid reinforced door with concealed handle.

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- Stainless steel covers for all utensils.
- In-built timer clock control optional.

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ROASTERS.. HEATERS.. APPLIANCES

NEW EQUIPMENT and MATERIALS

CIRCULAR FLUORESCENT LAMP

Circular fluorescent lamps supplied with translucent rotating bases have been announced by Sylvania Electric Products Inc. of Salem, Mass. Suitable for ceiling fixtures, table and other portable lamps, these new lamps provide cool, diffused light for many home and commercial applications. Translucent plastic bases permit turning the lamp a full 180 degrees without removing it from lamp holders. By reversing position of the lamp it may be turned another 180 degrees, thus making possible a total of 360 degrees around the lamp holder.

Translucent plastic bases also pick up light from the lamp and tend to eliminate dark spots in a continuous ring of light. A typical lamp has an outside diameter of 12", is rated at 32 watts, 2500 hour life and has an output of 1600 lumens from a T-10 bulb. Other circular lamps, also equipped with rotating translucent bases will be available with 8½" and 16" outside diameters.

NEW INSTANT-START LAMP

A new 40-watt fluorescent lamp, tailored especially for more dependable operation of instant-start lamps, will be available soon from the Westinghouse Lamp Division, Bloomfield, N. J.

Freed from the former requirement that instant-start lamps be used with special lampholders, the lamp contains a new feature, a special metal tab within a medium bipin base. The tab is riveted to the two base pins, connecting them within the lamp itself and preventing possible damage to the lamp cathodes in the event improper or defective lampholders are used.

Because of this connection, Mr. Beggs added, "the lamps will not operate on regular starter type equipment and can be used only with instant-start ballasts.

NEW SIZE 00 CONTACTOR

Convertible contacts, easily changed from normally open to normally closed without additional parts, are an outstanding feature of the new size 00 contactors just announced by the Industrial Controller Division of the Square D Company.

Conversion from normally open to normally closed is performed simply by removing a movable contact assembly, inverting it, and putting it back in place. No additional parts are involved.

In building the new contactors, Square D engineers have combined both accessibility and compactness. All terminals, in addition to being accessible and conveniently located for individual or group mounting, have provision for two wiring clips.

Complete information is available in Bulletin 203, by writing the Square D Company, 4041 N. Richards Street, Milwaukee 12, Wisconsin.

NEW SOLA TRANSFORMER

Sola Electric Company announces the release of two new transformers specifically designed for the operation of eight-foot, 25mm low pressure, cold cathode lamps. These new transformers incorporate the Sola patented constant voltage principle which assures a constant light output regardless of supply voltage fluctuations as great as 10%.

The new ventilated case design in-

THE IWI MAN WITH A WISE PLAN *finds*

TAYLOR FIBRE

can be tailored to meet customer's exacting requirements.

Fine fibre and phenol fibre available in rods, sheets, tubing and washers.

A variety of grades, sizes and thicknesses, all listed in the IWI Blue Catalog for your picking and purchasing convenience.

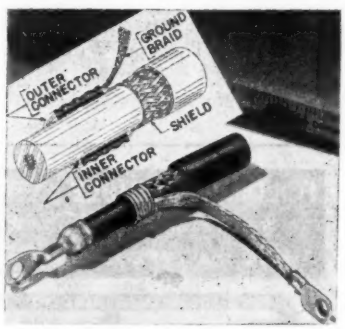
INSULATION & WIRES, INC.

2127 PINE STREET • ST. LOUIS, MO.

corporates an isolated condenser compartment which results in very low condenser temperatures. The single lamp transformer is provided with a roomy outlet box with knockouts to simplify wiring. In the two-lamp transformer the leads may be brought out through the end or bottom. Both transformers are small, compact units that fit comfortably into restricted installation channels. They are described in Bulletin CC-107, Sola Electric Company, 2525 Clybourn Ave., Chicago 14, Ill.

NEW BURNDY CONNECTORS

The making of connections, taps, and spices in coaxial and shielded cable is greatly simplified by the use of connectors designed especially for the purpose and just announced by Burndy Engineering Company. These connectors are new members of the Hydent line, which are installed by indenting with Burndy Hytools. Solder and the possibility of insulation being damaged by heat are eliminated.



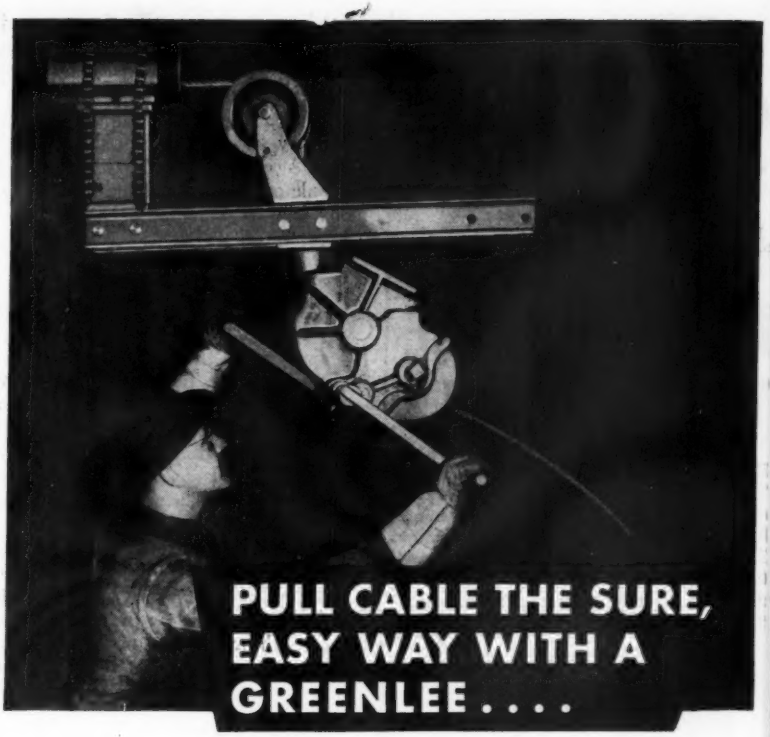
The connector for the braided conductor or shield may be installed with a braid tap to make a terminal connection or ground tap, or it may be used merely to anchor the shield to prevent the braid from slipping.

Connection with the inner conductor is made with a Hylug having an insulation shroud. The lug is indented to the conductor, and the shroud crimped to the insulation to form a mechanically strong and moisture-proof terminal.

ELECTRICAL LIVING BOOKLET

For distribution by utilities and dealers, a new 8-page booklet, "Better Living Means Electrical Living," is announced by Westinghouse Electric Corporation.

Designed to help consumers plan ahead so that electrical equipment can be added without rewiring, the new booklet includes photographs and



Simplify and speed cable installation work with a GREENLEE Cable Puller. Cut costs on each job with this fast-working, one-man-operated equipment.

And the GREENLEE does your work right! Clamps directly on to the conduit, *pulls straight out* to prevent loosening of hangers and damaging of cable insulation. Provides pull up to 7,500 lbs. Two speeds—one for fast pull, the second for steady, extra power for heavier work.

Easy to carry, easy to set up, the GREENLEE Cable Puller draws cable through all conduit: straight or bent, open or covered, on long or short runs. Attachments are available for pulling from concealed conduit also.

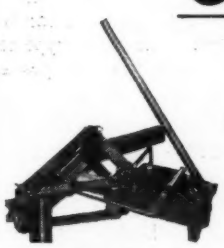
Save time, labor and trouble—install cable the easy way—with a GREENLEE Cable Puller. For complete details write today for your copy of free Catalog 33E. Greenlee Tool Co., Division of Greenlee Bros. & Co., 1770 Columbia Avenue, Rockford, Illinois.

Get Ready with Greenlee!

REGISTERED TOOLS

GREENLEE

FOR THE CRAFTSMAN



HYDRAULIC BENDER—One man quickly makes smooth, precise bends in pipe up to 4½", rigid and *thin-wall* conduit, tubing, and bus-bars—with a GREENLEE Hydraulic Bender. Portable—easily carried to the job and set up—saves time and materials. Whatever your bending job, there's a GREENLEE to do it better, faster!

OTHER GREENLEE TIME-SAVING TOOLS FOR ELECTRICAL WORK

Hand Benders • Joist Borers • Electricians' Bits • Knockout Punches • Pipe Pushers

Mr. Tops, the Paragon symbol of top quality.

TOP QUALITY

POULTRY HOUSE TIME CONTROLS

Here are two first quality Poultry House Time Controls. Paragon "PS" models are designed for both morning and evening lighting, with dimming period for roosting. The Paragon Model 301 is designed essentially for morning lighting only. It is a heavy duty, industrial type time switch adaptable to poultry house lighting.

Model "PS" for Morning and Evening Lighting

Model 301 for Morning Lighting Only

Send for Authoritative Bulletin

Paragon has prepared a 4-page, 2 color bulletin containing authoritative information relative to poultry house lighting control. It summarizes the recommendations of leading poultry authorities and gives complete data regarding the wide range of Paragon poultry house time switches. Send for a supply to distribute among your dealers and power companies.

PARAGON ELECTRIC COMPANY

13 Old Colony Building • Chicago 5, Illinois

Paragon Chicago

BUILDERS OF ELECTRICAL EQUIPMENT SINCE 1905

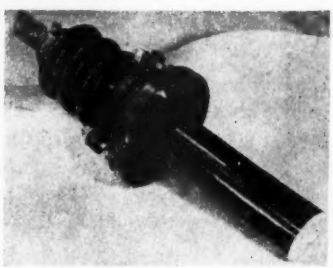
sketches of electrical appliances and equipment. The benefits of electrical living are discussed, and essentials of good wiring listed.

Dealers and utilities may secure quantity supplies of Booklet B-3602 from Westinghouse distributors, and sample copies are available from P. O. Box 868, Westinghouse Electric Corporation, 306 Fourth Avenue, Pittsburgh 30, Pa.

NEW TRANSFORMER BUSHINGS

Two new cementless transformer bushings have been announced by the Pennsylvania Transformer Company, Pittsburgh, Pa. All joints between the porcelain and metal parts are sealed by clamping without the use of cement which assures oil-tight and gas-tight joints.

The heavy current bushing with voltage ratings of 5000 and 15000 volts and current ratings from 500 to 3000 amperes, has on the lower end of the bushing conductor, a laminated connector which is attached to the



transformer leads. Being flexible, this connector eliminates stress on the insulator caused by thermal expansion of the transformer lead.

Electrical and mechanical connections between the stud and the hardware at the top of the porcelain are made by a cap nut tightened against the porcelain through a cork gasket, and a terminal cap on the same stud, tightened against the cap nut. This metal to metal contact assures permanent pressure on the threads of the stud and provides a positive high pressure and low resistance contact. Either a spade-type terminal for bus connection, or a cable clamp-type terminal may be used. Both types are interchangeable.

DYNAMOMETER MANUAL

W. C. Dillon & Company, Inc., 5410 West Harrison St., Chicago 44, Ill., has recently published the Dillon Dynamometer Manual. This is believed to be the first complete presentation in manual form of the story of the traction type dynamometer and the constantly increasing number of uses which are being found for it in simplifying testing and weighing procedures in practically every industry.

Copies of the booklet will be sent free on request to readers interested in perfected testing instruments.

E-Z CODE WIRE MARKERS

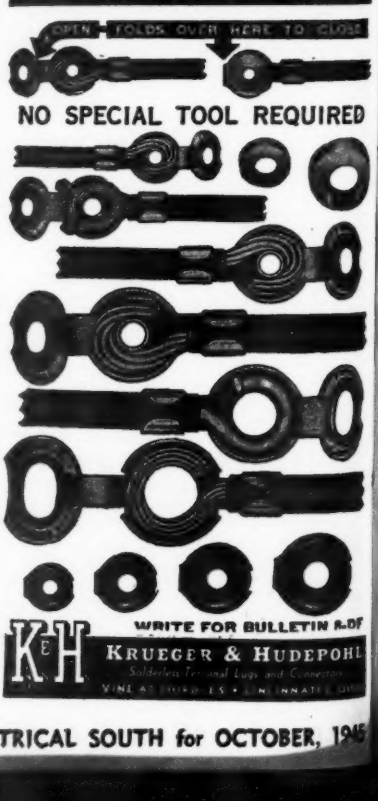
A bulletin describing the E-Z Code identification markers for cables, conduits and pipes has been published by Western Lithograph Company, 600 East Second St., Los Angeles 54, Calif.

Until the perfection of E-Z Code markers, the identification of cables, pipes and conduits was a constant headache to engineers, maintenance men and superintendents.

E-Z Code markers are easy to read, and help reduce costs by saving man-hours, speeding servicing, installations and repairs. They are made of flexible durable material and coated for permanence. Supplied on cards, ready to use, they stick quickly without moistening. If interested in wire markers, send for sample and folder, "How to Save Time on Wire Marking."

FOLDING **DOUBLE** CUPPED ★ WASHER LUGS ★

A SIZE and TYPE *for every need!*



WRITE FOR BULLETIN A-DF

KH KRUEGER & HUDEPOHL

Solderless Terminal Lugs and Connectors

CINCINNATI, OHIO

MINIATURE ELECTRON TUBES

Miniature tubes designed for efficient use in battery-operated radio receivers, hearing aids and many other electronic circuit applications where light-weight and compactness are important considerations, are manufactured by Sylvania Electric Products, Inc., Emporium, Pa. The miniature tube types, now largely absorbed by

the urgent needs of the armed forces, include a complete line of T-5½ sizes. Wartime developments, the trend toward the use of higher frequencies and physically smaller tubes will be extended to many postwar applications where miniature tubes will serve civilian purposes.

NEW INSULATING BOARD

Development of Durok, a 100% non-cotton cellulose electrical insulating board with better characteristics than 100% rag board, has been announced by Rogers Corporation, 16 Mill Street, Manchester, Conn.

Citing the increasing difficulties in obtaining new cotton rag cuttings which have not been wax, resin or chemically treated for better textile effects, the manufacturer's announcement said that years of search for a suitable raw material resulted in locating the new non-cotton cellulose. Over a year of production experimentation has now been pronounced successful.

Dielectric strength, ranging from 400 to 600 volts per mil, is said to equal the best 100% rag sheet hitherto available. Methanol and naphtha extractables, important in hermetically sealed refrigerator motors, are .02% to .12% and .02% to .08%, respectively, and represent an improvement over any material hitherto used in that industry.

Stock sheet sizes are 36"x48" and 36"x24", with the grain direction parallel to the second dimension. Thicknesses now available are .015", .020", .025" and .030". Durok's producers also fabricate the material into motor slot cells and other insulators and structural pieces.

Take a TWO-WAY LOOK
AT THE
Monarch Fuse
LOOK NO. 1
the MONARCH
SUPPORTING
BRIDGE
Note how this Monarch construction prevents the fibre bar from coming in direct contact with the screw connecting renewal link to knife blade. This minimizes the charring of the fibre bar and positively prevents excessive overheating of knife blades. Note also large metal parts which dissipate heat. Result: dependable protection.
"Look No. 1" illustrates this construction in a lighter-duty Monarch knife-blade fuse and "Look No. 2" shows adaptation of this principle in a heavy-duty model.
LOOK NO. 2
the
FERRULE TYPE
Specify Monarch Fuses
for improved
FUSErvice
Monarch
RENEWABLE
Fuses
MONARCH FUSE CO., LTD.
118 E. FIRST ST., JAMESTOWN, N. Y.

AMERICA'S *Leading* STORES *Feature*

Vaculator

the PRE-SOLD Coffee Maker with PROTECTED Profits!

the name made famous by foremost chefs! *Vaculator*

The favorite of foremost chefs is rapidly becoming No. 1 with housewives, too! Heavy duty PYREX brand glass, distinctively designed, equipped with famous DUTCH Filter—VACULATOR is "tops" in value!

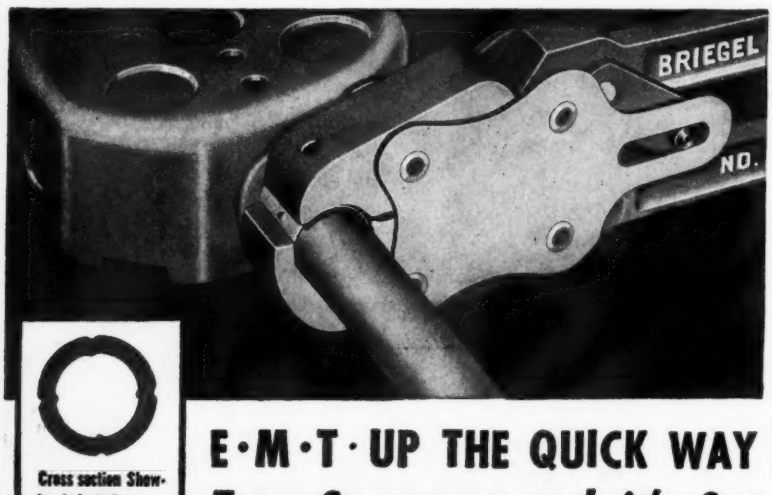
50¢ LIST

DUTCH *clothless* FILTER

Sparkling CHINA
NO cloth, NO paper
Snaps in EASILY

Fits all standard makes

VACULATOR · CHICAGO 6, U.S.A.



Cross section Showing Indentations.

E·M·T·UP THE QUICK WAY

Two Squeezes and it's Set

TWO QUICK SQUEEZES give you Finer, Faster Conduit Connections. B-M Fittings do away with the twisting, turning and tightening of nuts and save you valuable time and materials. Then too, they are stronger, neater and much easier to work with in tight places. Start using B-M Fittings today. Have more satisfied customers—more profits from each job!

(All B-M Fittings carry the Underwriters Seal of Approval)

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Enameled Metals, Pittsburgh, Penn.
National Enameling & Mfg. Co., Pittsburgh, Pa.
Triangle Conduit & Cable Co., New Brunswick, N. J.

Prompt Deliveries on Properly Rated Orders

BM

BRIEGEL METHOD TOOL CO. • Galva, Ill.

COPPERWELD MOUSING TOOL

An additional method for dead-ending Copperweld guy strand has been made possible by the development of a simple and inexpensive mousing tool by the Copperweld Steel Company, Glassport, Pa. This tool, together with a coil of annealed Copperweld wire, enables the lineman to place

about 50 closely wrapped turns around the free end of the strand and the main strand, thus binding them securely together.

This type of dead-end will develop the full rated strength of the strand and is applicable for attaching the strand to the various guy fittings, such as eye bolts, strain insulators and anchor eyes. It provides an alternate method to serving the individual wires of the strand and to dead-ending with guy clamps.

The Copperweld mousing tool is similar to the Copperweld serving tool except for a slight difference in the forming of the tines at the ends of the tool and the additions of two small J hooks which are for maintaining tension on the mousing wire.

ELECTRONIC TUBE MANUAL

A new 412-page technical manual on electronic tubes for industry has been prepared by the General Electric Company's Tube Division at Schenectady. It is designed for engineers, designers and other tube users as a guide in selecting proper tubes for numerous industrial applications.

The manual, which sells for two dollars, features popular applications of ignitrons, phototubes, thyratrons, phanotrons and other electronic industrial tubes. It is profusely illustrated with photographs, outline drawings and performance curves. The manual has an expander type binder and has been prepared in loose-leaf form with tabbed dividers, for ease of adding new data as it is made available. Provision has been made to sup-

ply purchasers with new data as prepared for the manual from time to time for a nominal annual charge of one dollar.

Copies of the manual may be purchased by writing Electronics Dept., 267-122, General Electric Company, Schenectady, N. Y.

PERMAFLECTOR LUMINAIRE

A new Permaflector fluorescent luminaire, No. A-1240, has been announced by Pittsburgh Reflector Co., Pittsburgh 22, Pa.

The luminaire is a complete unit consisting of top-housing, ends, baffle, reflector and necessary ballast equipment, starter-sockets and lamp

holders. It is designed to utilize two 40-watt T-12 fluorescent lamps and embodies diffusing ribbed glass side panels having the lower halves curved on a radius around the axii of the lamps so as to leave an opening in the bottom of the luminaire approximately 7 inches wide by its entire length.

The luminaire is so constructed that the diffusing ribbed glass side panels may be easily removed for servicing and maintenance. It may be installed directly against the ceiling or pendant mounted with stem hanger and canopy assembly, and may be joined end to end with like units to form a continuous line luminaire.

NEW MULTI-GANG BOXES

The Wiremold Company, Hartford 10, Conn., manufacturers of surface metal raceways and fittings for electric lighting, power, telephone and signal system wiring, announces the addition of a complete series of multi-gang receptacle and device boxes, designed especially for use in connection with the installation of hospital call systems and other signal system work.

Boxes are available from single up to 12-gang, ranging in size from 4⅝ inches long x 2⅞ inches wide x 2¼

KEEP MACHINES IN SERVICE
Without Dismantling!

IDEAL
MOTOR MAINTENANCE
EQUIPMENT

① **RESURFACERS** keep Commutators and Slip Rings at original smoothness and efficiency without taking motors out of service.

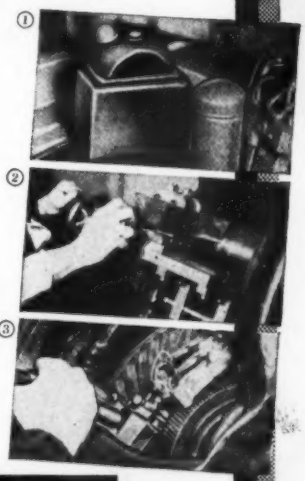
② **PRECISION GRINDERS** restore surfaces that are badly scored and out-of-round. No dismantling.

③ **MICA UNDERCUTTERS** undercut hardest mica without removing armature.

IDEAL WIRING DEVICES—"Wire-Nuts," Wire Strippers, Fish Tape Reels and Pullers, Lugs, Joist Boring Machines, Wire and Cable Reels.

PROMPT DELIVERY

IDEAL COMMUTATOR DRESSER CO.

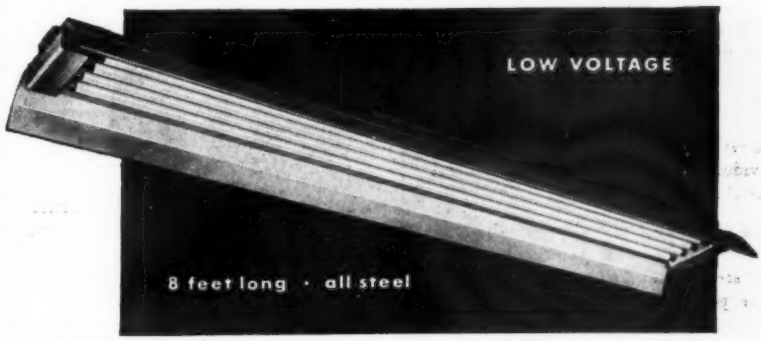


IDEAL *Sycamore*

1017 Park Ave., Sycamore, Ill.

1076

*COLOVOLT COLD CATHODE
INDUSTRIAL FIXTURES



Here is the new Colovolt industrial fixture, one of a complete line of industrial and commercial "packaged" units. Equipped with the standard 93" Colovolt 10,000 hour lamp, Colovolt fixtures may be used singly or in continuous line lighting in multiples of 8 feet. Instantaneous starting, no flickering, guaranteed for 1 year except for failure due to breakage are extra advantages of the Colovolt Cold Cathode low voltage fluorescent lamp. The long life expectancy of Colovolt lamps may be realized even when constantly turned on and off, and *pre-scheduled re-lamping, with no loss of production or time, is now possible with Colovolt installations.*

**Trade mark registered U. S. Pat. Off.*

Contact your electrical wholesaler or jobber, or write us for full details and prices.

GENERAL LUMINESCENT CORPORATION
680 S. FEDERAL STREET CHICAGO 5, ILLINOIS

SWITCH TO..

Safety

That's where Levolier Switches come in. In tests they have taken over 168,000 pulls — on and off — without trouble or a miss. Over a lifetime of actual service. Levolier switches are hand assembled and individually tested, and listed by Underwriters' Laboratories.

Use them in Fluorescent installations, individual light, or F. H. motor control. They are made in 3 to 10 ampere capacity, single pole, two circuit, series multiple and three way pull. Ask your Electrical Wholesaler about Levolier Switches . . . Switch to Safety.

Levolier

McGILL
MANUFACTURING CO., INC.
Electrical Division
VALPARAISO, INDIANA

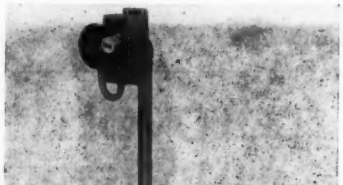
inches deep to 4⅝ inches long x 22¾ inches wide x 2¼ inches deep. The cover and base of 1- to 3-gang boxes, inclusive, are provided with groups of 3 twistouts for No. 500 and No. 700 Wiremold on each sdie and ends, and with conduit knockouts in base. The 4- to 12-gang boxes, inclusive, have 2 twistouts for No. 500 and No. 700 Wiremold on each side and ends, and 1000 Wiremold in cover and base, no conduit knockout in base. The 5- to 8-gang boxes, inclusive, have 1 group of twistouts on ends and 2 groups on side; the 9- to 12-gang have 1 group on ends and 3 groups on sides.

Wiremold Catalog and Wiring Guide, listing all raceways and fittings, available on request.

IMMERSION HEATER

A new Chromalox electric immersion heater is specially designed for melting solid oil, greases and similar compounds in standard 55-gallon drums and similar containers by allowing the heater to melt its way down through the contents.

Steel sheathed heating elements form almost a complete circle around



a tubular unit located in the center. This construction eliminates cold areas which would leave unmelted masses of material or which might cause the heater to tip over.

Known as Type BLC portable drum immersion heater, this new Chromalox unit is available for 115 or 230 volt, single phase current in ratings up to 4400 watts.

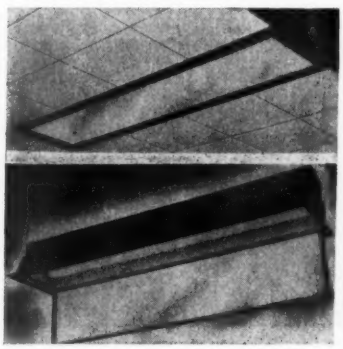
For additional information and prices, write manufacturer: Edwin L. Wiegand Company, Pittsburgh 8, Pa

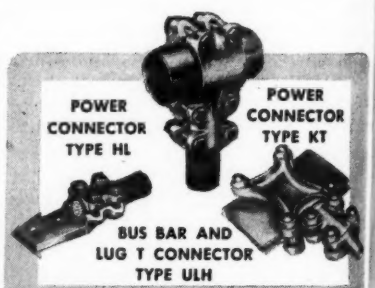
WAGNER PRODUCTS FOLDER

Wagner Electric Corporation, 6400 Plymouth Avenue, St. Louis 14, Missouri, has recently issued a 16-page folder (form GU-86) describing briefly its entire line of electrical and automotive products: motors, transformers, industrial brakes and controls, hydraulic brakes, air brakes, tachographs (speed-recording speedometers), NoRoL, brake lining, and brake-service tools. Also included are pictures and addresses of Wagner's 29 sales and service offices, and an airplane view of the factory.

RECESSED TROFFER FIXTURE

A new type of fluorescent fixture is designed to solve both the problem of architectural harmony in a lighting plan and that of easy service in





O. Z. POWER CONNECTORS

For superior mechanical strength, for ease of assembly, for maximum electrical conductivity, specify O. Z. Power Connectors.

An inter-dependent bolting system makes O. Z. Connectors *stronger*. Their Hex Cup construction speeds assembly – only one wrench is needed for tightening.

And long, dependable service is assured by the corrosive-resistant copper alloy used in their construction.

See for yourself the details that make O. Z. Power Connectors superior – on every important count.

O. Z. ELECTRICAL PRODUCTS
- Solderless Connectors
- Cast Iron Boxes
- Conduit Fittings
- Cable Terminators
- Grounding Devices
- Power Connectors

O. Z. ELECTRICAL MFG. CO.
262 BOND STREET · BROOKLYN, 2 N. Y.

Represented by
M. L. WHITMAN . . . . . 313 Bona Allen Bldg., Atlanta 3, Ga.
W. J. KELLER . . . . . 304 Natchez Bldg., New Orleans 12, La.
F. O. OSTERMUELLER . . . . 3120 Amherst Street, Dallas 5, Texas

cleaning and replacing lamps. The new Wiley "recessed troffer" fixture is designed to fit in as little as 7-inch space between the true ceiling and the false ceiling into which fixtures are recessed.

It is equipped with the Wiley E-Z servicer so that the glass shield or louver may be opened, or removed altogether, simply by raising one side, sliding the shield over and dropping.

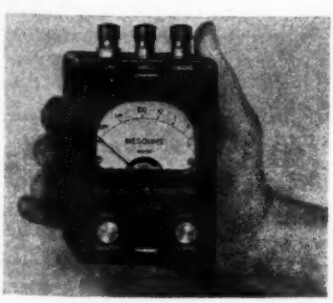
The Wiley "recessed troffer" fits into a ceiling opening of 12″ x 48″. It is made for both individual installation or continuous runs in open, louvered or ribbed glass models for 2, 3 or 4, 40-watt lamps with instant start or starter ballasts. It is welded steel construction with inside reflector and louvers finished in 85% reflection polymerized white, infra-red baked at 300°. It is the product of R. & W. Wiley, Inc., 129 Dearborn Street, Buffalo 7, N. Y., and is described in "recessed troffer" bulletin No. 214.

RESISTOR CATALOG

A new resistor catalog of 32 pages has been issued by Ward Leonard Electric Company, Mount Vernon, N. Y. The booklet describes and illustrates various types of units, gives sizes, resistance values, mountings and enclosures. A copy will be sent on request.

INSULATION TESTER

This new Weston instrument, known as Model 799, is an extremely sensitive direct-reading insulation measuring device for applications where high testing potentials are not desired. It provides a single range for readings from 0.1 megohms to 10,000 megohms; with the 10,000 mark at 8 per cent of the scale length, thus providing good readability. The circuit has a test potential of less than 50 volts d-c. An electrical guard circuit is provided for elimination of surface leakages when testing cables. Thus the Model 799 is finding broad application throughout the electrical industry and in many other industries as well.



"EFFICIENCY" DEVICES FOR CONDUIT AND CABLE SUSPENSION

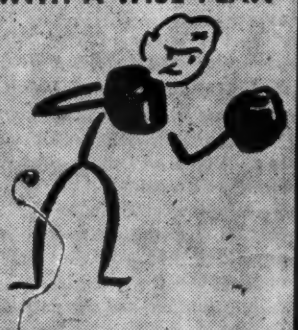
EFFICIENCY BUSHING SUPPORT

. . . a convenient independent mounting . . . requires only one bolt to be tightened to hold porcelain bushing and clamp to base. Bushings are split-design to reduce power leakage and are completely surrounded by metal. The circular base is adjustable to any angle required for the conductors. EFFICIENCY Bushing Supports are available for Cable diameters from 5/16" to 2-3/8".

Write today for your copy of our Catalog 38B . . . contains complete construction and application data on all EFFICIENCY Devices.

Efficiency ELECTRIC AND MANUFACTURING CO.
EAST PALESTINE, OHIO
MANUFACTURERS OF EFFICIENCY ELECTRICAL DEVICES FOR CONDUIT, WIRE AND CABLE SUSPENSION

THE IWI MAN WITH A WISE PLAN uses MANNING PAPER it's tough!



Manning 300 All Rag Paper has stamina and a high dielectric strength. For superior insulating quality, use Manning Products.

INSULATION AND WIRES IWI SERVICE
INSULATION & WIRES, INC.
2127 PINE STREET • ST. LOUIS, MO.

HELWIG SPEER
Carbon Products

BRUSH KITS
of all descriptions
CARBON BRUSHES
of all descriptions

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Oklahoma City 2, Oklahoma
Telephone: 2-6881
3000 Block McKinney, Houston 3, Texas
Telephone: Preston 1610
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MODERN ILLUMINATION

FLUORESCENT

G-G-G

INCANDESCENT

Our Engineering and Designing Staff For All Needs in Lighting at Your Disposal

GRUBER BROTHERS

Holophane Licensee

Fleur-O-Lier Manufacturers

Write for Our Descriptive Bulletins

Showrooms and Factory

72-78 Spring St., New York 12, N. Y.

In electrical testing, for example, it replaces expensive or specially built test stands, for checking leakage between windings in transformers, cable resistance, leakage of low-voltage paper and mica condensers without damaging the dielectric, and for numerous other tests. The plastic, paint, and other industries find it ideal for studying insulation characteristics — leather and other fields for moisture absorption tests—safety shoe manufacturers for conductivity testing, etc.

Woman Line Patrolman Makes Good in Florida

(Continued from page 40)

of territory periodically, looking for various trouble signs, such as broken insulators and slack guys. Some of this she can do along the highway from her Ford, but many miles of her beat cut across fields, through swamps and stubble, away from the road, so this she must cover on foot.

Mrs. Wood makes occasional night patrols. She is subject to call for emergency patrols at all hours and for after-hour switching, which must be done after dark. She gets her orders in switching direct from the division dispatcher, over the hi-line telephone.

She also assists the line crews and substation maintenance men in their work and has done an excellent all-around job. Does she like it? Right!

Retail Store Operating Control

(Continued from page 37)

a detailed record of the payment after depositing your check. By writing the check and office copies in one operation, accurate postings and reference copies are assured.

Complete control for the accounts payable section of your business is provided when you use this method of paying bills.

The Purchase Order and Receiving Report furnish price and quantity verification and confirm correctness of vendor's invoices which have been grouped by vendor and due date for payment. Following is the disposition of the copies:

Check and Remittance Statement: Sent to vendor. Statement shows vendor entire detail of payment. When checks are returned from bank, they are sorted numerically and reconciled.

Accounting Copy: Retained in accounts payable section for posting to ledger. Filed alphabetically as an index to voucher copy.

Voucher Copy: Stapled to vendor's invoice and filed numerically by check number for audit purposes as record of completed transaction.

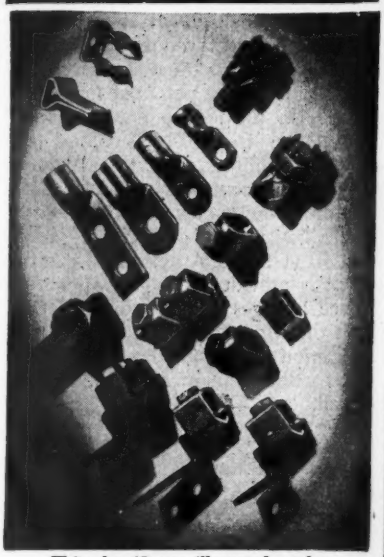
Recording and Posting Payments

Naturally, any dealer should keep a record of any check written in payment for purchases. The voucher check plan is written in triplicate. However, if the dealer is not using the complete voucher plan, only the original and duplicate need be prepared in which case the duplicate is filed by Check Number.

These checks are then recorded in the check register with any discount taken listed in separate column and amounts distributed to their proper classifications, using a Bookkeeping or Wide Carriage machine for this work.

If a voucher system is used, no further posting is necessary; otherwise, of course, the charges are posted to the supplier's account record. Here again the dealer uses whichever type of bookkeeping machine he has for posting the ledgers. If he is using the typewriter-accounting machine for his work, he can again take advantage of the opportunity to combine operations—by writing the check, posting the supplier's Account Record, prepar-

ILSCO
Electrical Connectors



Write for 48-page illustrated catalog.
Southeastern Representative
VERLYN H. BRANHAM
180 Interlochen Drive, N.W.
Phone CHerokee 5256
ATLANTA, GA.

ILSCO COPPER TUBE & PRODUCTS, Inc.
CINCINNATI, OHIO

Replacement Parts for

WASHING MACHINES
(ALL MAKES)
IRONING MACHINES
ELECTRIC RANGES

•

A SOUTHERN CONCERN DOING BUSINESS WITH SOUTHERN DEALERS & REPAIR AGENCIES

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• WHOLESALE
• GENUINE REPAIR PARTS
• PROMPT SHIPMENT

Distributors
GOODRICH WRINGER ROLLS GATES BELTS
T-K REPLACEMENT RANGE PARTS

WRITE FOR CATALOG: PRICE $1.00 PREPAID

TRIBLE'S

811 NINTH ST., N. W. WASHINGTON, D. C.
Member: Appliance Parts Jobbers Assn.

THE "*Fresh-Air* MAKER"

provides fully the comfort and ventilation so essential in army barracks, mess halls, hospitals, headquarters, theaters and other military buildings. Its fine design and sound construction meet the specifications drawn for army fans and it is particularly adaptable to the various types of installations found in army buildings.

HY-DUTY BLOWERS

Single Inlet—Double Inlet. 400 CFM to 12,500 CFM.

Single Inlet Blower illustrated at left is particularly adapted for ventilation of mess halls in military establishments.

VENTILATING DIVISION
SCHWITZER-CUMMINS COMPANY
1175 MASSACHUSETTS AVE. • INDIANAPOLIS 7, U. S. A.

Dual Grip Assures Positive Electrical Contact
Tab Guides Lamp Insertion
Channel Guides for Inserting Lamp Pins
Sturdy Spring Assures Snap Action
Tapped Hole Simplifies Mounting
No Nut Required
Tapered Back Allows Space For End to End Mounting
Patented
Other Pats. Pend.
High Dielectric Strength

Lloyd

FLEX-LOC
Lamp Holder

FLEXIBLE—Automatic—self adjusting to variations in lengths of lamps and spacing dimensions in fixtures.

AUTOMATIC LOCK AND CONTACT is positive. Stands all shocks. Lamp cannot fall out.

INSERTING LAMP: Place lamp pins on both sides of lamp holder guiding tab. Push lamp up slightly and pins will slide into channels. As pins slide up to terminal holes, the holder is flexed outward, compressing the spring. As lamp pins enter holes, the holder snaps inward, with spring returning to normal.

TO REMOVE LAMP: Take hold of lamp with one hand. With other, press guiding tab of nearest lamp holder outward and the lamp will disengage itself.

LLOYD AUTOMATIC STARTER

IN THE NEW RED PLASTIC CAN
Stronger—Higher Dielectric Strength

When lamp becomes inefficient . . . flickers or blinks, Lloyd Automatic cuts off the current automatically . . . starts the new lamp when inserted, automatically.

Prevents overheating of ballast. Saves maintenance and power costs.

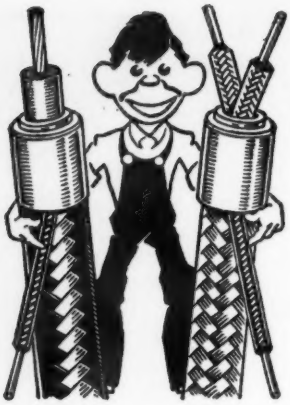
Listed and Approved by Underwriters' Laboratory Inc.

Certified by Electrical Testing Lab. Spec. 6.

Pat. Nos. 2200443 2228210

LLOYD PRODUCTS CO.
LLOYD POLICY INSURES QUALITY
Providence 5, Rhode Island

Representatives – Branch Offices – Warehouse Stocks in 23 Leading Cities



The T&B Way of Grounding Coaxial and Metallic Sheathed Cables

If you use coaxial or any other kind of metallic sheathed cable, these T&B Wedge-On Grounding Sheath Connectors are literally made to order for you.

They are ideal for coaxial wiring in radar, multiple telephone circuits, radio and audio circuits, and ultra high frequency work. Also for all metallic sheathed cable work.

T&B Wedge-On Grounding Sheath Connectors consist of only two parts. When telescoped with a simple Wedge-On Tool they make a neat, steam-lined, solderless and permanent installation, grounding the shield of the cable to the ground wire without disturbing the Conductors.

Send us a sample of the shielded metallic cable you wish to ground and we will advise you promptly what size Wedge-On Connector and Tool you require.

These T&B Wedge-On Grounding Sheath Connectors are distributed solely through the competent service organizations of T&B Electrical Supply Wholesalers.

The Thomas & Betts Co.,
Incorporated
Room 423
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T&B
THE THOMAS & BETTS CO.
INCORPORATED
manufacturers of electrical fittings since 1898
ELIZABETH, 1, NEW JERSEY
In Canada: Thomas & Betts Ltd., Montreal

ing Check Register, and amounts distributed to proper classifications—all in one operation.

While most of the above has been concerned with the handling of payments for merchandise, all types of payments are handled in the same manner, including salary payments to employees. The size of this latter job depends upon the number of employees, but it should be born in mind that the desk bookkeeper, as well as the more automatic bookkeeping machines and the typewriter accounting machines, may be used to write the employee's check, employee statement of earnings, and post the earnings record and journal.

These complete machine-accurate records simplify the preparation of Social Security Tax and Unemployment Tax deductions, when the time comes to submit the reports.

The above descriptions only point to the simplicity of keeping the necessary records with variations to fit the needs of the individual business. Payroll plans are so flexible that various means can be demonstrated for handling payrolls of various sizes.

The records and systems described here for the small business are, as emphasized, only the minimum essentials. Many small stores will need additional records. Some of these will be described in future articles.

How To Light an Office

(*Continued from page 33*)

inaires. Ceilings, walls, and upper surfaces on luminaires collect dust which affects their reflecting qualities.

It is well worth-while to institute regular lighting equipment maintenance on a set schedule. Conditions in each location set the time. In general, lamps and luminaires should be dusted every two weeks and thoroughly washed with soap and water every four to six months.

Darkened lamps should be replaced when they reach the end of their useful life and burned out lamps replaced at once. A burned out fluorescent lamp left in place may damage the ballast equipment with which it is connected.

Rewiring Old Houses

(*Continued from page 27*)

makes it always hard to collect what the contractor should have for it.

A complete rewiring job is something that the contractor can show other customers. He can just as well point with pride to it as a new job—sometimes better because he may have had more to do with the designing and planning of the face-lifting operation.

Mr. Parker said that life would have been more complete if he had been able to borrow a rubber augur so he could bore holes around corners! But when you know that an outlet has to go in at a certain spot—there is always a way to get it there.

In this house, in several places, they tried to run their lines from the basement up. Obstructions prevented. In several instances, they found it comparatively easy to get a line to the attic and then drop down.

On one wall, they could not get to the location from above or below. It looked like a stymie until they discovered the easy way was to come up the opposite wall and under the floor.

These things call for the native ingenuity inherent in every electrician. This bump of knowledge is easily developed.

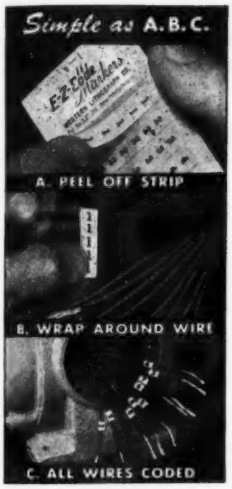
The building was wired with nonmetallic cable between walls and with standard conduit for lead-in and basement panels.

"You're going to have to bore with a long augur," Mr. Parker and Mr. Adams said, "and you're going to

ST. LOUIS
a great city
HOTEL MAYFAIR
a great hotel
DOWNTOWN ST. LOUIS
AT YOUR DOORSTEP

• EASY ECONOMICAL WAY TO •

CUT CODING TIME IN HALF use E-Z-Code



MARKERS

—ON WIRES • CABLES CONDUITS • PANELS, Etc.

Coding with these simple, ready-cut markers eliminates confusion, speeds production, maintenance and repairs.

Of flexible, durable, waterproof material, mounted on handy cards, pre-cut and ready to apply, no moistening necessary. Standard, in-stock codes fit most uses. Can be "tailor made" with special symbols or colors.

Used by biggest names in the electrical world.

Free Sample • Write Today

WESTERN LITHOGRAPH COMPANY

Dept. 02.—600 E. Second St., Los Angeles 54, Calif.

Sepco AUTOMATIC ELECTRIC WATER HEATERS

HIGHEST in Sales . . .
Lowest in OPERATING cost

Today's modern kitchen, bathroom and laundry depend upon an unlimited supply of hot water.

The SEPCO electric water heater is the best way to fill this need for plenty of hot water — for every member of the family.

ATTRACTIVE - MODERN
ECONOMICAL
DEPENDABLE & SAFE

1915 - *Time Tested* - 1945

AUTOMATIC ELECTRIC HEATER CO. INC.
POTTSTOWN, PENNA.

RETAILERS WINNING

Double Header

Foresighted American retailers are out to better their bond-selling record with a higher bond buying average. Improve your payroll savings plan now!

Here's Why:

- **Helps curb inflation**
- **Builds a large future market for your goods**
- **Inspires employees to sell more Bonds. The best salesman is sold on his product.**

Here's How:

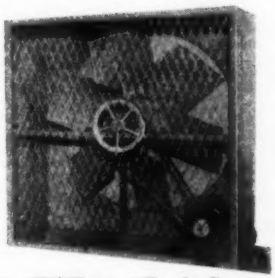
Through personal contact ask every employee to sign up for regular payroll savings each week. Keep it up until you get at least 90% participation and 10% of payroll applied to the purchase of War Bonds.

OUTSTANDING RETAILERS PROVE IT:

	% employees participating	*% total payroll savings*
Department store	98.	10.5
Clothing store	100.	10.0
Food store	91.	10.1
Drug store	94.	10.3
Specialty store	90.	10.0

Wind-O-Vent EXHAUST FANS

Portable — Quiet — Dependable — Safe



WOV-30 (Typical) Rear View

The Wind-O-Vent Exhaust Fan is built in four sizes with resilient mounted quiet-running, heavy duty motors. Full directions for mounting come with each fan.

This fan is of universal application either as an exhaust fan for commercial use or as a window fan.

CERTIFIED RATINGS

TEST STATEMENT—Each Reed Unit Fan bears a certified rating label of the Propeller Fan Manufacturers Association. This label certifies that the fan has been tested in strict accordance with the Standard Test Code as approved by the American Society of Heating and Ventilating Engineers.

Front View

REED UNIT-FANS, INC.

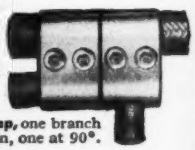
Manufacturers of Ventilating Equipment

1001 St. Charles Ave., New Orleans 8, La.

It's Easy to pick the right CABLE TAP— from the *Complete* line

You'll find the widest variety of parallel and 90° taps, combinations, and gutter taps—in a range of sizes up to 1,000,000 cm. Insulating Bakelite covers can be furnished for all types.

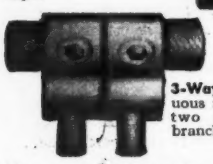
Single 90° Tap from main conductor.



Combination Tap, one branch parallel to main, one at 90°.

2-Way Gutter Tap.

Bakelite Covers can be furnished for all types of Penn-Union cable taps.



3-Way; continuous main and two separate branches.

Also a complete line of Service Connectors, Terminals, Tees, Straight and Parallel Connectors, Grounding Connectors, etc.—every good type of conductor fitting. And every one is accurately made, thoroughly tested —*dependable.*

L. MORRIS LANDERS
315 Walton Bldg. ATLANTA, GA.
WALTER J. HUEMMER
Dallas Transfer & Terminal Warehouse Bldg. Dallas, Tex.
PENN-UNION ELECTRIC CORPORATION
Erie, Pa.

PENN-UNION
Conductor Fittings

have to do some fishing and pulling, but putting what they want, where they want it, is profitable. We do just that."

Good Plans Now— More Profits Later

(*Continued from page 25*)

tinue to use the demonstration kitchen. When merchandise becomes plentiful they will remove the chairs and use this space for merchandise display. It is so arranged that by merely moving the displays they can set up the auditorium and cooking school again when needed.

While no commercialism was attempted or allowed at these patriotic meetings, each person attending was asked to register in the store register.

W. A. Moore is the store manager in Richmond, and during the period that the demonstration kitchen is in full operation, he will solicit church groups to get up a list of those interested in attending the cooking schools. These people will be required to attend all classes of the course and will be subjected to the appeal of the merchandise. For this service, the firm will donate a sum to the church for having organized a class. This eliminates the possibility of having five students one day and fifty the next in a cooking school.

The matter of financing time-purchases is a very important subject for all newcomers into the appliance field, which is essentially a time-payment proposition all over the country.

Before the war the average banker shied away from time payment paper. Finance companies sprang up with hundreds of different ways to handle the paper. Most of them resorted to recourse paper—that is regardless of what happened, the finance company could hold the dealer responsible in case of non-payment.

An investigation by this writer has uncovered the fact that many banks are now friendly to the well set up appliance dealer and in some cases are handling the paper without recourse. This does not mean that the dealer can sell refrigerators to vacant lots but does mean that by allowing the bank to withhold a small per cent running from two to about eight per cent. which is returned to the dealer when the contracts pay out, he can get financing at reasonable rates.

Thus is will pay the dealer to contact his local banker and he may find to his surprise that this individual has anticipated his coming and has a plan worked out which will give him the additional capital necessary to handle a volume of business that is profitable.

Subox
ANTI-CORROSIVE PAINTS
CONTINUE AVAILABLE
IN GOOD QUALITY
AND FOR
REASONABLE DELIVERY
Subox, Inc.
NORTH ARLINGTON, N. J.

SALES ENGINEERS WANTED

Experienced electrical men, familiar with low voltage distribution systems to act as sales specialists in important District Offices on following: Panelboards, safety switches, enclosed circuit breakers, bus duct and load centers. Men accepted to receive full training at factory at company's expense before assignment. Write to Supervisor, Technical Employment, 306 Fourth Avenue, Pittsburgh, Pennsylvania, for application form.

WESTINGHOUSE ELECTRIC CORPORATION

ENGINEERS WANTED

National manufacturer of lighting equipment needs the services of engineers for the design and development of lighting transformers, capacitors, and reactors.

There are openings for application design engineers on Industrial, Commercial, and Street Lighting Equipment. Address Box No. 603, Electrical South, Atlanta, Georgia.

UNIVERSAL ELECTRICIANS TOOLS
Visegrips, CeeTee, waterpump, needlenose, diagonal cutter pliers, crescent wrench, pipe-wrench, plastic screwdriver, clawhammer, hacksaw and 14-pc. socket set 7/16 to 1" including Universal joint and flex handle. Complete 25-pc. guaranteed tool kit only $49.85. Immediate shipment! Catalogue and price list free! Order now!
Universal Tool Company
1527 Grand ES-10 Kansas City Mo.

Auld Acquaintance Not Forgot

Each of our factories join us in doing our part to get merchandise to our wholesalers. Complete data is now or shortly will be ready of the following factories we represent:

Setchell-Carlson, Inc.—Radio Receivers—6 and 110 V. Sound Systems.
Waverly Tool Co.—Steam-O-Matic, Petipoint Irons.
Stern-Brown, Inc.—Superstar Appliances.
Royal Electric Co., Inc.— Fuses, Flexible Wire.
Mid-West Chandelier Co.—Aurora Fluorescent Fixtures.
Jeryl Lighting Products—Residential Fixtures.
Dura Electric Lamp Co.—Fluorescent Starters and Sockets.
Acme Battery Corp.—Flashlight and Radio Batteries.
Banner Friction and Rubber Tape.

Please write us for data or to have our representative call.

JULES J. DREYFUSS & SONS
46 S. W. FIRST ST. MIAMI 32, FLA.

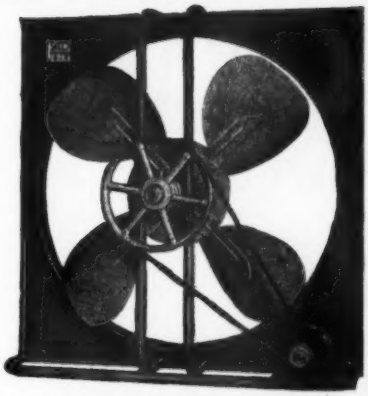
Mr. (Al) Almerico, representing in Louisiana, Mississippi, Alabama, Tennessee.

SECO BELT DRIVEN COOLING FANS

Better than ever

Its simplicity of design permits easier installation in Walls, Attics, or Penthouses.

SECO Fans deliver a maximum volume of air at slow speed, with extreme quietness.



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ATTICS
SCHOOLS
CHURCHES
and for
Industrial Installations

AVAILABLE SIZES
24", 30", 36", 42", 48".
(3800 to 18,500 C.F.M.)

Write for Illustrated Bulletin, Specifications & Prices.

Contact your nearest Distributor or write

SECO-LITE MANUFACTURING CO.
4916 EASTON AVE. • ST. LOUIS 13, MO.

Made to GIVE Service ...not require it!

The improved *"Dixie-Maid"*
ELECTRIC CHURN

Quality components and rugged construction make Dixie-Maid Electric Churns give long trouble-free service. Recent improvements include *larger, round* Splash Plate, recessed Supporting Arms and *heavier* Cord with *Switch*, as illustrated. Slow-speed, Heavy-Duty Motor. Thumb-screw adjustment to fit 3 to 6 gallon containers. Agitates all the milk—makes more butter faster. Production now being expanded. If your jobber can't supply you order direct.

MADE AND GUARANTEED BY
SOUTHERN ELECTRIC PRODUCTS, Anderson, S. C.

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FOR
MOTORS
FANS
CONTROLS

PROMPT SHIPMENT FROM LARGE STOCKS

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Brown-Brockmeyer	General Electric	Master
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READING ELECTRIC COMPANY, INC.
Parts Distributors for the Manufacturer
200 William St. *Barclay 7-6616* New York 8, N. Y.

Connecting Diagrams for Lap-Wound Induction Motors

Every man concerned with motor rewinding will want a copy of this new publication by A. C. Roe which contains 72 modern connecting diagrams for induction motors of from 4 to 12 poles. The diagrams are arranged for dual voltage connections and best magnetic balance. A copy of this 132 page book is available with each 3-year subscription to Electrical South—total cost, $3. Write at once to

ELECTRICAL SOUTH
1020 Grant Bldg. Atlanta 3, Ga.

better home wiring calls for

BRYANT

RANGE CONNECTORS

The Bryant No. 3846 Range Connector is a 3-wire polarized outlet for flush mounting with a Bakelite receptacle and solderless terminals and a rating of 50 amperes, 250 volts. Thousands of these connectors have been proved in use in homes everywhere. No new home should be built without one.

Companions to this receptacle are the Bryant 3-wire polarized Range Cord Sets with welded contacts and a heavy, non-separable Bakelite head. Standard 36 inches in length, they assure ample connecting convenience. Cat. No. 3898 for 35-ampere and No. 3899 for 50-ampere circuits.

SURFACE MOUNTING CONNECTOR

The Bryant No. 3826 Range Connector is designed for surface mounting in home modernization. Rating—50 amperes, 250 volts.

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A SUBSIDIARY OF WESTINGHOUSE ELECTRIC CORPORATION

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